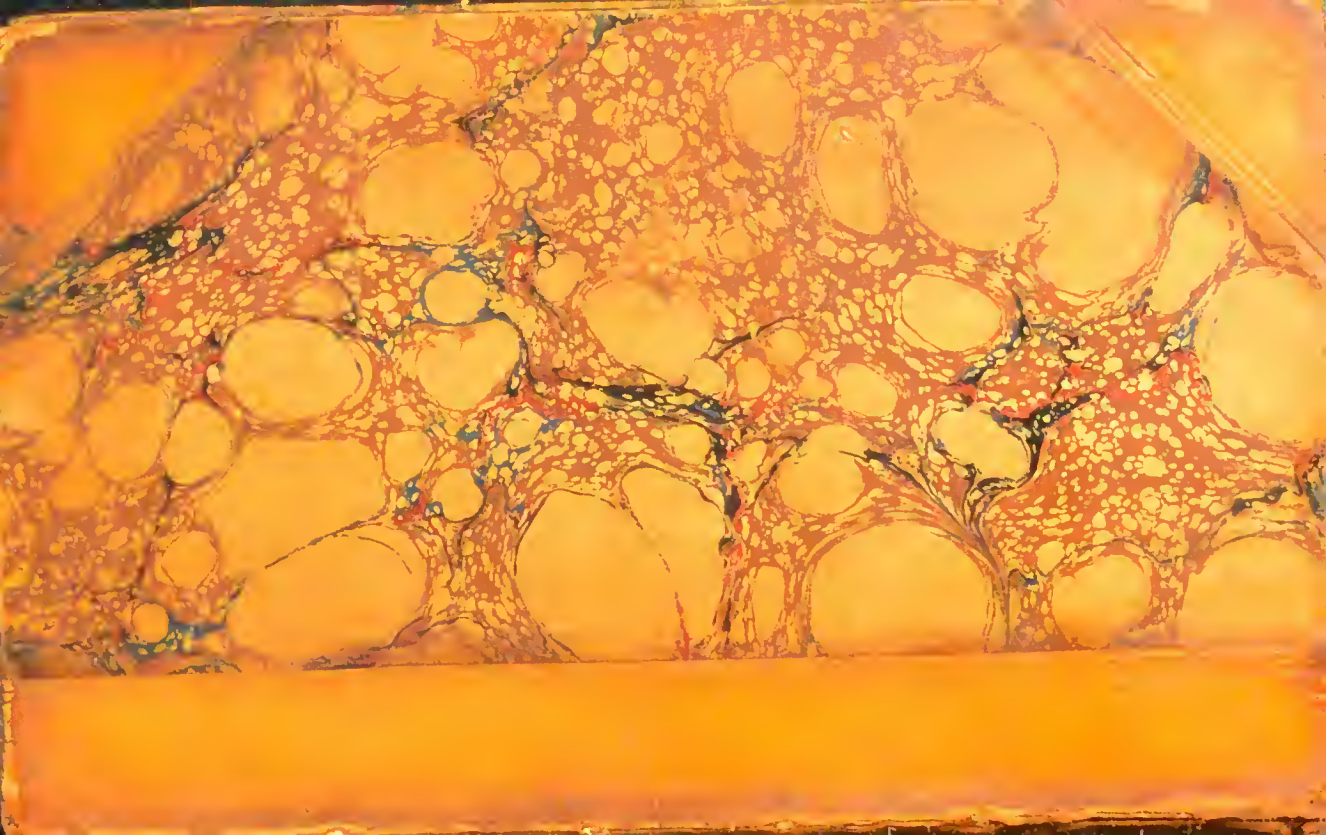

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MANUAL OF PATHOLOGY;

CONTAINING THE

SYMPTOMS, DIAGNOSIS, AND MORBID CHARACTERS

OF

DISEASES:

TOGETHER WITH AN EXPOSITION OF THE

DIFFERENT METHODS OF EXAMINATION

APPLICABLE TO AFFECTIONS OF THE ORGANS CONTAINED WITHIN THE

HEAD, CHEST, AND ABDOMEN.

By L. MARTINET, D.M.P.

TRANSLATED, WITH ALTERATIONS AND ADDITIONS, BY

JONES QUAIN, M.D.

FOURTH EDITION, REVISED AND ENLARGED.

LONDON:

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STATIONERS' HALL COURT.

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AUTHOR'S PREFACE.

THE First Part of this work, which is intended as a Clinical Guide, contains a brief statement of the necessary requisites for the proper conduct of clinical pursuits; and a detailed account of the improvements which, of late years, have been introduced in the methods of investigating the diseases of the three great cavities of the human body.

In the Second Part, care has been taken to give, in a condensed yet complete form, every thing that is necessary to enable the observer to distinguish diseases from each other, and, if necessary, to draw up with precision the his-

tory of them: to this is subjoined an enumeration of the symptoms of the different affections, and the morbid alterations which they induce. The office which the author has for some years filled at the "Hôtel Dieu," has afforded him abundant opportunities of verifying, by actual observation, the truth of his statements.

In the compilation of his work, the author has freely availed himself of the researches of all those who have thrown any light on the pathology and diagnosis of diseases, as well as of those who have contributed to improve the methods of investigating them: with this view he has constantly consulted the works of Laennec, Andral, Lallemand, Serres, Louis, Broussais, Rostan, Bertin, &c. &c., and also the treatises of Chomel, Double, and Landre Beauvais, on Semeiology and general Pathology.

From Professor Recamier he has borrowed his classification of constitutions, and also his method of examining patients, and has occasionally introduced some practical remarks, made in his Clinical Lectures, for which he is anxious to make every acknowledgment.

In this new and improved edition, the chapter on the examination of the abdominal viscera is considerably extended; the method of studying the diseases of the different tissues, as well as the mode of making *post-mortem* examinations, are pointed out; and some suggestions are offered on the subject of diagnosis.

Paris, 1826.

TRANSLATOR'S PREFACE

TO THE

FOURTH EDITION.

The edition of this work now offered to the public will, I trust, merit a continuance of the favourable notice which it has hitherto received. I have enlarged it in several parts, and to make it more useful to the younger student, I have added in some parts a few cases, taken from the most approved works, with a view to illustrate the general instructions given in the text on the subject of Clinical Observation.

As the plan and arrangement of the original work have been approved by several persons whose opinions I value highly, I have not made

any alteration in these particulars; but, where the chapters in the French were too brief, considering the importance of the subjects of which they treated, I have written and inserted others in their stead; and have substituted several sections, written chiefly with a view to direct the attention of students to the consideration of some interesting and important pathological points, and to induce them, whilst engaged in clinical pursuits, to apply to the study of those methods of investigation which have been found so eminently useful in clearing up the pathology and diagnosis of different diseases, particularly those of the thoracic and cerebral organs.

The chapter on Cutaneous Diseases in the original was so meagre and defective that it became necessary to erase it altogether, and substitute another, in the composition of which

I have availed myself of the works of Willan and Bateman, as well as the more recent publications of Mr. Plumbe and M. Rayer. The section on Fever has been added for similar reasons. The different parts thus added to the English edition will be found included within brackets, [ ], and also enumerated in the table of contents.

The proper object of pathology is—the knowledge of the alterations induced by disease in the organs and textures of which the system is composed. This knowledge, however, becomes useful in the diagnosis and treatment of disease, only when we are enabled to group round each form of organic lesion the symptoms which accompanied and characterized it during life, and to connect the symptoms and the lesion in such a way as that they should

stand in the relation of sign and thing signified. When pathology is studied with these views, it becomes, not a pursuit of mere curiosity, but one of the greatest importance. It is, however, only of late years that it has begun to assume the rank of a special department of medical science. It is true that lecturers usually devote a few discourses to what is termed pathology; but as by this arrangement it is treated as a subordinate part of a more extended course, the time allotted to a consideration of the alterations of structure induced by disease, and the symptoms which mark them, must necessarily be limited. When we consider the importance of a knowledge of pathology to every practitioner, and bear in mind the rapid advances that have been made in this department of inquiry of late years, we cannot fail to be convinced, that the facts and principles which

it has to unfold are too many and important to be adequately treated in a few lectures, and that they would furnish materials sufficient to engage the attention of students and teachers, for a period equal to that which is usually allotted to other parts of medical education.

Almost all the pathological works that have been published of late years are constructed on anatomical principles; and no matter what arrangement may have been adopted, their basis rests on General Anatomy. The French anatomists have rendered this department peculiarly their own, by following up the views developed by Bichât. By referring to his treatise on General Anatomy, it will be found that this distinguished anatomist endeavoured to apply to

the investigation of the structure and functions of the human body, the principle of analysis. After having resolved the system into the elementary textures of which it is composed, he examined their vital and physical properties, in order to obtain a knowledge of the qualities of the different organs, as being the surest means of becoming acquainted with their functions in health, and lesions in disease. "This method of considering organized bodies is not an unnatural abstraction, nor a speculative refinement. It arises from the essential nature of their constitution, and accords with every phenomenon with which we are acquainted. It may be traced in the observations of many of the older anatomists, and considered as the basis of some of the ingenious physiological theories of Mr. Hunter. Although, therefore, at first sight, it may have the appearance of

being arbitrary and artificial, it is nevertheless, I am persuaded, founded on the most approved principles of physiological investigation*."

The utility of General Anatomy may be exemplified by considering the application that has been made of its principles to the investigation of the pathology of the lungs. We find these organs invested externally by a serous, and internally lined by a mucous membrane, which pervades the bronchial tubes, even to their ultimate termination in the air-cells. If we could just imagine the one to be drawn out from the interior, and the other peeled off, like the rind from a fruit, we should leave insulated what the older anatomists termed the paren-

* Wardrop on Diseases of the Eye.

chyma of the organ. Now, observation has shewn that either of these three component parts may be inflamed separately, the others remaining unaffected; and pathologists have marked the inflamed condition of these textures by distinct names—the one being called pleuritis, the other bronchitis, the third pneumonia. The serous membrane, when inflamed, will present a certain set of characters, go through a series of changes, and exhibit a train of phenomena in its anatomical characters, as well as in the symptoms which arise, as widely different from those presented by the mucous membrane, under similar circumstances, as if these textures did not belong to the same organ. But if we examine the progress of inflammation in the peritoneum, in the arachnoid, or in the serous lamella of the pericardium, and compare its characters and symptoms with those

presented by the pleura, we shall find the most striking similitude, though these membranes are placed in different cavities, and enter into the composition of organs which minister to perfectly distinct functions. As, in consequence of their striking similarity in structure, properties, and anatomical characters, these membranes are ranged under one head, and form one class, so their diseases should also form one group; on the obvious principle, that the more close the similitude between parts in their structure, functions, and characters, in health, the more nearly will they resemble one another in the changes induced by disease.

These considerations point out some, at least, of the advantages of studying general anatomy, —they indicate, at once, a mode of arranging

diseases according to a natural method, by grouping them together according to their mutual affinities, and thereby introducing into medicine those rigorous methods of investigation which have already effected so much for other natural sciences, particularly Botany and Zoology.

These views were first pointed out in this country by Dr. Carmichael Smyth*, and on the continent by Pinel: and as each, without any communication with the other, originated the same ideas, both are equally entitled to the credit of having directed others to the proper mode of making anatomy subservient to the investigation and classification of diseases. Pinel

* Medical Communications, vol. ii.

has, however, obtained the greater share of distinction, because he published a large work on the subject*, whilst Smyth only wrote an essay; and, also, because it was his work which gave origin to Bichât's justly celebrated treatise on General Anatomy.

As Pathology cannot be cultivated with effect without a knowledge of the principles of General Anatomy, the student should in the first place make himself acquainted with the anatomical, vital, and physical properties of the different primary textures of the human body, in their healthy condition.

2d. He should examine the alterations in-

* Nosographie Philosophique.

duced in these respectively, when attacked by inflammation.

3d. Should investigate the symptomatic or constitutional disturbance which supervenes on, and is excited by, each local organic lesion.

4th. When the mind has travelled in this track through the classes Phlegmasiæ, Hæmorrhagiæ, and Exanthemata, it will be prepared to enter on the consideration of that difficult and much-litigated question—"Is every febrile or constitutional disturbance a consequence of a local derangement?" or are there any fevers dependent solely on a general cause, and which, as being unconnected with any local affection, merit the appellation "*essential?*" The different affections of the organs and vis-

cera which minister to important functions are usually studied in their anatomical order; beginning with those of the head, and then proceeding to those of the chest and abdomen. And as, by this arrangement, diseases are brought together so that their symptoms may be readily compared and contrasted, they are treated in the way most likely to establish their diagnosis, which is confessedly the most difficult and important acquirement within the range of medical study. "La science du diagnostique est la première des parties qui constituent réellement la médecine; sur elle est fondée toute administration de moyens curatifs; enfin elle conduit au pronostic*."

J. Q.

London, *September* 1835.

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* Landre-Beauvais, Semeiotique.

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MANUAL

OF

PATHOLOGY.

PART I.

1. Medicine may be termed a "science of facts": as such it is indebted for its present distinction to observation, and on it must depend for its further advancement. To observation, the physician owes the most exact and valuable parts of his knowledge, and upon it he rests the basis of his diagnosis, prognosis, and treatment of disease. As, then, observation is, at once, the surest pledge of the future improvement of the healing art, and the safest guide to those who practise it, we must see at once the necessity of applying diligently to its cultivation.

2. It is at the bed-side of the patient that the observer must study disease; there he will see it in its true character, stripped of those false shades by which it is so frequently disguised in books. There, freed from the vagueness and illusion of systems, the student can acquire fixed and defined notions of diseases, and learn the difficult art of distinguishing them. If physicians had always confined themselves within the limits of strict observation—if they had restricted themselves to such conclusions as are fairly deducible from facts, the science of medicine would not now be overloaded, as it is, by hypotheses, and we should possess a sufficient

body of materials to enable us to establish sound general principles.

3. Though clinical studies are necessarily long and laborious, still they should not discourage the young observer; they will amply requite him for his pains. Let it not, however, be supposed that observation is to be confined to the mere acquisition of facts; it will be of comparatively little value unless directed by reflection. To observe nature is not enough; she must be interrogated, if we wish to wrest her secrets from her, and acquire at the same time the means of communicating to others the result of our researches.

4. The improved means of investigating diseases which have been devised of late years, by rendering the methods of examination more strict and rigorous, have given a very decided impulse to medicine. Pathological Anatomy has raised it to a level with the descriptive sciences, when considered in reference to organic alterations, and the "Auscultation Mediate," has placed it amongst the physical sciences, so far as the doctrine of symptoms is concerned. Every well-informed person now admits that the discovery of Laennec has effected for medicine what Petit and Desault had already done for surgery. For if a catheter, introduced into the bladder, gives an assurance of the existence of a foreign body in that viscus, pectoriloquy is a no less decisive test of the presence of a preternatural excavation in that part of the lung in which it is perceived.

5. But, notwithstanding the advances that have been made in the investigation of diseases, particularly those of the brain and its investments, and those of the chest and digestive organs,—notwithstanding the improvements that have followed the researches of Bayle, Corvisart, Laennec, Broussais, Lallemand, Chomel, Louis, Andral, and other modern pathologists, we cannot deny that many points still remain immersed in obscurity, and that several questions of primary importance continue undecided. As, however, it is by observation alone that these and other difficulties can be removed,

it cannot fail to be instructive to inquire what are the qualifications necessary to be possessed by those who engage in the difficult undertaking of correcting erroneous impressions concerning the doctrine of diseases, and removing the obscurities that beset them.

6. Whoever wishes to extend the boundaries of science should commence his education by acquiring a perfect knowledge of the Greek and Latin languages, and should then proceed to learn the modern languages, particularly the French, Italian, and German. This is necessary, to enable him to study with effect the many excellent works published by our neighbours; and (should he visit those countries) to observe with advantage their clinical practice, and form an accurate estimate of their modes and principles of treatment.

7. The observer should acquire correct ideas of several sciences which may be deemed accessory to medicine. He should be acquainted with Chemistry, Natural History, and Natural Philosophy, as he will constantly have occasion to make application of their principles; and if he be ignorant of them, many physiological and pathological phenomena will appear altogether unintelligible.

8. The sciences more strictly medical, and therefore indispensable, are General Pathology, Physiology, and Anatomy, particularly the anatomy of the tissues and viscera in their healthy state, which has hitherto been too much neglected, and which has begun to be properly regarded only since pathology has been more carefully studied. How can any person know a particular tissue to be diseased, if he be ignorant of its characters in its healthy state? How can he distinguish the effects of disease, from those changes which occur after death has taken place, if he does not possess correct notions of each, and of the anatomical characters which are peculiar to them? Until anatomy is studied in this way, disputes and controversies will go on, as they have hitherto done, and medicine will make no real progress towards improvement. These remarks apply with at least equal force to pathological anatomy, without a knowledge of

which it is quite impossible to give precise and detailed statements of the various alterations of which the tissues and organs are susceptible, or avoid confounding the different structural lesions which occur in them.

9. These, however, are not the only requisites which an observer should possess. He should be acquainted with Materia Medica, Surgery, "Hygiène;" and, above all, Pathology, without which he can establish no claim to the character he assumes; and still it is by observation only that he can become a pathologist. Hence the second part of this work is calculated to remove some of the difficulties that stand in the way of the young observer, by giving such an exposition of the characters and diagnosis of diseases, as will enable him to prosecute his studies with effect.

10. In order to draw up correct histories of cases, it is not sufficient merely to observe the phenomena which they present during their progress; they must be observed accurately; and he who expects to do this, must possess many requisites both of tact and discrimination, which can be acquired only by a *long and regular* attendance on clinical practice.

11. A statement of a case should not consist of a mere detail of such symptoms as accident has caused to be perceived, nor of a confused, unconnected enumeration of them. It requires no small degree of sagacity to group them together according to the relations which subsist between them, so as to refer them to a common centre, or to a derangement of some particular function or organ, and thence ascend to a knowledge of the seat and nature of the affection of which they are characteristic.

12. It is quite impossible for an inexperienced person to appreciate the many shades of difference which diseases assume. How can his unpractised eye distinguish a mere accidental phenomenon from a leading symptom,—a remote sympathy from a direct effect, or an insignificant circumstance from that which should constitute the very basis of his indication of cure? If he cannot assign their respective values to all these circumstances, how

can he derive any advantage from the facts which he collects? or how can his reports be ever considered as exact descriptions of the diseases he has seen? A statement of a case can never he useful to him who makes it, or profitable to science, unless it he a faithful transcript of the phenomena which have occurred. For if it he not correct in all its parts, it will hut mislead the judgment and confirm error; whilst exact facts, on the contrary, strengthen the judgment, and contribute to the establishment of an exact science.

[Dr. Cullen viewed this matter in nearly the same light. "To observe accurately (he used to say in his lectures) requires a freedom from prejudice, and an acuteness, that belong to few. Many circumstances tend to vitiate statements dignified with the name of experience. The simplest narrative of a case almost always involves some theory. It has been supposed that a statement is most likely to consist of unsophisticated facts when reported hy a person of no education: but it will he found an invariable rule that the lower you descend in the medical profession the more hypothetical are the prevailing notions. Again, how seldom is it possible for any case, however minutely related, to include all the circumstances with which the event was connected. Hence, in what is commonly called experience, we have only a rule transferred from a case imperfectly kuown to one of which we are equally ignorant. Hence that most fertile source of error, the applying inferences deduced from one case to another case, the circumstances of which are not precisely similar. Without prineiples deduced from analytieal reasoning, experience is a useless and blind guide."—*Edit.*]

3. When such results as these follow from the mere fact of the observer's knowledge heing inadequate, what must be the consequence if it be hut a mass of falsity and error? Instead of transcribing a faithful history of the diseases presented to him, he will give an incorrect and inadequate account of them, and the only result of

his observations will be, to lead to false theories, which may be considered as so many pathological romances that have long retarded, and still retard, the progress of Medicine. Even under the most favourable circumstances, such a person can only attain an imperfect mode of examination: the degree of its imperfection will of course be lessened in proportion as he acquires a better knowledge of pathology, or has opportunities of observing and reflecting on the facts collected by others: hence we can generally form an estimate, on reading a case, of the degree of knowledge possessed by the person who has detailed it.

14. But these are not the only sources of error to be guarded against. It will be found necessary to review such reports and observations as had been made during the earlier years of study, which are generally incorrect or incomplete. This is not done for the purpose of supplying their deficiencies, or correcting their errors, but in order to guard against any erroneous impressions they may have left on the mind; impressions which, in too many instances, have exerted an injurious influence on the whole course of men's professional career.

15. Correctness and discrimination are qualities indispensably necessary for a physician; and these he can only acquire by constant exercise and observation, which will so sharpen his senses and faculties that he will seldom fail to seize and appreciate symptoms and phenomena which escape the notice of others. But it is not sufficient that the senses should be thus exercised, as we know that there are many minute circumstances that will escape them; hence the necessity of assisting them by certain auxiliaries. Thus it is that certain alterations of structure, which are not perceptible by the naked eye, are rendered manifest by a lens or a microscope; and a virus, which cannot be detected by our senses, or even by chemical tests, becomes evident by inoculation.

16. Each of our senses being adapted to special purposes, all of them are made to render important service to medical inquiries, and ought to be employed concur-

rently in conducting them. Percussion, and still more auscultation, have clearly shewn the great value of a sense which hitherto was seldom directed to this sort of investigation; in a word, by the eye we can distinguish small-pox from cow-pock; by the ear, ascites from tympanites; by the smell, gangrene of the lung from phthisis; by the taste, diabetes mellitus from simple phthisuria: by the touch, aneurism from various other tumours.

17. The observer should possess penetration, not subtlety;—sagacity, to follow the thread of a narration too often obscure;—discernment, to overcome the obstacles which false modesty or want of candour may throw in his way;—a sober judgment, to form just ideas of the impressions conveyed by his senses;—correct reasoning powers, that he may deduce no conclusions but such as fairly follow from the premises;—perseverance, that he may not be discouraged by the difficulties that stand in his way;—and, lastly, resolution and humanity to disregard the danger of contagion, as he does the disgust and risk of the dissecting-room.

18. The observer should not allow any circumstance of a case, however trivial it may appear, to escape him. He should be free from prejudice and prepossession, if he wishes to avoid giving to his observations an erroneous direction, and impressing on his statements the bias he has contracted. He should see things as they really are, not as he may wish them to be. He should always recollect that the slightest error or negligence may be injurious, not only to himself, but also to those who repose confidence in his statements. The duty of an observer is that of an historian; from that he should not depart: his chief merit is correctness and fidelity.

19. *Clinical instruction; its necessity.*—But if even experienced persons have to contend against difficulties such as are here mentioned, we can readily see what care and exertion are required on the part of those who are just entering on their clinical pursuits. Hence the necessity of their receiving a regular course of instruction, which, whilst it fully impresses their

minds with the importance of the pursuit in which they are engaged, may point out to their notice the various phenomena which present themselves, and indicate their relative value and connexion. A system of clinical instruction so conducted should be considered as indispensable in every hospital which is resorted to by students. "Life is short, and Art is long," says the father of physic. No man can see every thing by himself; but reading will make him acquainted with the observations of his predecessors and contemporaries, and enable him to profit by their experience; in fact, it becomes an imperative duty to read and study, as a most efficient means of acquiring new and useful information; but if this be not a sufficient incentive, then it should be recollected, that, if we do not read, we run the risk of being left behind by others, and that our knowledge is receiving no addition, while theirs is progressively advancing.

The observer should be scrupulously exact in his descriptions and statements. He should, above all things, be impressed with that integrity and love of truth which are indispensable to a physician. The mere gratification of self-love should give way to considerations of higher consequence, and which concern so nearly the interests of humanity.

20. *Books of reference; their utility.*—One of the most efficient means of acquiring these different attainments, and becoming skilful practitioners, is, when we see a particular case, to consult the writings of those who have treated expressly upon the disease to which it is referred. The work will then be studied with advantage when we have an example before us with which we can compare its descriptions, &c. In this way, precept and practice are made to go hand in hand, tact and discretion are acquired, and the experience of those who have already distinguished themselves is made to supply our deficiencies in this particular. We should not, however, follow this course as servile imitators. We must exert our own discretion, for though

we find much to approve, we shall meet with something to condemn: while we adopt the one, we appropriate to ourselves part at least of the spirit of our masters; when we reject the other, we feel reason to distrust ourselves, seeing the errors into which our predecessors have fallen. When the mind is disciplined in this way, the scope of its inquiries will be greatly expanded, and a new importance be given to circumstances previously regarded as insignificant. It is on this principle that such great advantage is derived from reading the works of the ancient physicians, who paid so much the more attention to the signs and symptoms of diseases, as they had not the lights of pathological anatomy to guide them.

21. We may here conclude these remarks, by saying a few words on the demeanor which ought to be observed towards sick persons, in order to gain their confidence, and obtain the disclosures which are necessary to form a proper decision on their cases. The physician should be calm and conciliating, should hear with attention the communications which his patients make, should put his questions to them with mildness, listen kindly to their complaints, and never fail to demonstrate an active interest in their welfare.

GENERAL REMARKS ON CLINICAL OBSERVATION— REPORTS OF CASES.

22. The basis of medicine, says Baglivi, rests altogether on observation—*Ars Medica est tota in observationibus.* But the facts which observation presents should be collected with care, method, and discrimination. According to the object which an inquirer proposes to himself, observation may be general or special. It is termed *general*, when directed to ascertain the general phenomena; for instance, of sporadic, endemic, or epidemic diseases; and *special*, when confined to single cases, collected at the bed-side of the patient: it is to this latter that our attention for the present is directed: the for-

mer shall be treated of when we come to consider the subject of medical constitutions.

23. Special observation has this marked advantage, that when a number of cases are detailed with judgment and fidelity, and every circumstance of them carefully noted, they present to us the different characters which a disease puts on in several individuals, which will always give to Monograph Works a decided advantage over general treatises.

24. In drawing up a case, it should always be recollected that it is done with a view to convey to others an exact representation of the facts which we have observed. In order to effect this, the words used, and their various shades of meaning, should be carefully considered, so that they may convey to the mind of the reader the facts as they really existed, without adding or suppressing any thing. The report of a case should be like the copy of a picture. It should be so faithful as to preserve all that individuality which marks each particular case, and distinguishes it from every other of the same class. Even when the phenomena of a case are confused and intricate, the observer should still express its real character, and should not seek to make it appear clear and simple, as is too often done, for that can only be effected by misrepresentation.

25. The statement of a case should not be loaded with superfluous detail; it should contain what is necessary, or rather what is indispensable, but when the subject is obscure, the details should be extended and minute. In the descriptive part no reflections or opinions should be introduced, as that cannot fail to interrupt the narrative.

26. The leading symptoms, particularly those which serve to establish the diagnosis, should first be noted down, ranged according to their importance, reference always being made, as far as can be done, to the order of their appearance. These should be expressed clearly, so as to impress them on the mind of the reader. If several organs be affected at the same time, the symptoms

preferable to each should be collected into separate groups; those which are common to all, or are of secondary importance, should follow; and then, if the treatment be given, it will be necessary to mark the state of the patient before and after the exhibition of medicine. Superfluous details should of course be omitted; and nothing stated but what is indispensably necessary.

27. It may, however, be sometimes useful to note the absence of any particular symptoms which usually exist in similar cases, lest the omission may be attributed to negligence or forgetfulness on the part of the observer, and so discredit be cast on the facts he has detailed.

28. When a disease is obscure, attention should then be redoubled, particularly if there be any controversies on the subject, and even the minutest details should be noted.

29. When therapeutics are the object of research, and when attention therefore is directed to ascertain the action of particular medicines, it is not necessary to report all the details of the cases; it is enough to state their general nature, and the circumstances of the patient both before and after the administration of the medicine. Its form and dose should be stated, as well as the effect produced; and lastly, some remarks should be made on the state of the patient when the treatment was discontinued. It is, in general, advisable to say a few words as to the state of the medical constitution, particularly when there exists any endemic or epidemic disease, as it must be evident that a symptom, which, under other circumstances, would be of no consequence, may then be of considerable importance; for instance, the existence of an epidemic varicella may throw much light on a pustular eruption with a central depression.

30. In some cases, words cannot convey to the reader all that is necessary to be expressed, particularly in describing the morbid appearances which a disease presents: this can only be remedied by sketching or drawing the parts.

31. To execute our task in this way must necessarily

be attended with many difficulties: but a case drawn up with adequate exactness and fidelity, becomes a complete monograph. In it we shall find stated the causes and distinguishing symptoms of the disease described, its progress and periods — the treatment adopted, and its effects; and the reader may profit almost as much by it as if he had seen it himself.

32. Nothing more fully proves the absence of sufficient precision in the conduct of observations, than the disputes about facts which we so constantly witness. If the same phenomena be accurately observed, there will be no room for any difference of opinion. Still, when we look over a number of cases, and observe the total want of conformity that there is in the descriptions of the same diseases, as given by different writers, we are often astonished at the discrepancy they exhibit, and feel disposed to consider it as a proof of the uncertainty of medicine, as if the errors of individuals should be laid to the charge of the science they profess. But whence, it may be asked, arises this difference in the reports of the same facts? It arises from the different degrees of knowledge possessed by the persons who have observed them,—from some error in their methods of observation,—from ignorance of the exact meaning of the terms they employ, or from want of attention in the examination of their patients. In fact, let any number of persons describe the same affection, if their judgments be equally correct and matured, if they possess the qualities above-mentioned as being necessary for the proper conduct of observations, and if they be equally well acquainted with pathology, the cases which they collect cannot fail to be marked by the same characters of truth and similitude, and in all we shall at once recognize the complaint described—whether it be arachnitis, pneumonia, peritonitis, &c. But if the disease according to one seems to be pleurisy, according to another pneumonia, a third phthisis, it clearly follows that the statements are given inaccurately, and that those who have made them are ignorant of

he differences which distinguish these diseases one rom another.

33. The observations should be transcribed immediately after the visit, in a book kept for the purpose, as being the only means of ensuring correctness in the statements. Whilst the facts are fresh in the mind, they will be noted down with accuracy; and if any thing be omitted, it can readily be supplied. But if any length of time be allowed to elapse, it must be at the risk of forgetting some of the leading circumstances, and of giving, probably, a false colouring to the whole.

34. It is only when the case is concluded, that it becomes necessary to make reflections on the diagnosis,—on any particular circumstances that may have occurred,—on the treatment pursued,—or, finally, on the connexions of the symptoms with the organic alterations found after death, if the termination has been fatal. By these means materials really useful are collected, either for the guidance of our own future practice, or the instruction of others; and so the most advantageous use is made of our experience.

35. In order to save time and trouble in the subsequent perusal of these cases, it will be found useful to place at the head of each of them, an abridged summary, containing the distinguishing signs—most important circumstances that occurred during the course of the disease—the plan of treatment pursued, and its effects;—and, finally, the organic alterations, if it has ended in death.

36. The following formula seems well adapted for the purposes here stated. It will enable the observer tu arrange his cases, and see at one view their most important phenomena. The clinical reports in the Hôtel Dieu are all drawn up in this way.

Case of ———

Year— No.
Month. Residence

Causes . . . . . .
Particular Symptoms . .

Duration of the disease .
Termination . . . . .
Treatment . . . . .
Effects . . . . . .
Morbid appearances . .

37. *Style of Writing.*—We may now conclude these general remarks with a few considerations on the style best suited to this species of writing.

In the first place, care should be taken that the terms employed should convey a precise meaning, and never admit of ambiguity; they should fully express the facts, without being strained. It is sometimes preferable to repeat a particular expression, rather than by endeavouring to vary it, run the risk of sacrificing clearness. The style should be plain and unaffected, free alike from ostentation as from mannerism. The narrative part should be written with simplicity and ease; but all that relates to the condition of the patient, and to the enumeration of symptoms, had better be given in the aphoristic form; it carries with it a greater degree of precision, as each word expresses an idea. Occasionally, however, it will be found necessary to deviate from this routine, to avoid the sameness that would necessarily be produced by a too rigid adherence to it.

METHOD OF EXAMINATION APPLICABLE TO ALL DISEASES.

38. Though the acquirements here pointed out are varied and numerous, it should not thence be inferred that they are too difficult to be attained. By industry and attention, if properly directed, much may be effected even in a moderate space of time, and a greater progress may be made than could at the commencement have been expected.

39. It will be here asked what course should be pursued in the conduct of our researches? Can we adhere to any fixed and uniform plan? Certainly not. For,

ıow could the same method of investigation be made to ıpply to diseases whose seat and nature are totally lifferent? Would it not be absurd, when examining a ease of effusion into the brain, to proceed in the same vay as if the effusion were seated in the thorax? And vhat resemblance can there be between the questions ıddressed to a person with malignant pustule, and one abouring under seirrhus of the stomach? Surely the neans of ascertaining the difference between small-pox ınd varicella—between hydrophobia, and certain ner-ous affections which simulate it, must be very different rom those adopted when we want to distinguish mania rom arachnitis, inflammation of the stomach from peri-onitis, or gout from articular rheumatism. For it would vidently be irrational to pursue the same routine of ex-ımination in diseases, so totally different in their seat, ıature, and character.

40. Our methods of examination, then, should partake of all that precision which marks the improved pathology of the present day; and though they may not be directed n every ease to each viseus and tissue, they should in-variably be directed to explore each of the great cavities, where the vicinity of the contained viscera, and their ıumerous sympathetic relations, eonstitute so many fer-ile sourees of error.

41. Several plans of examination have been pointed out and insisted on; yet we too often find, that though after putting many questions without any direct object, the observer may be able to collect a greater or less num-ber of symptoms, he still has acquired no knowledge of the disease about which he is inquiring. Such a course is not merely injurious from the time it wastes, but also by conveying the erroneous impression that the symp-toms are to be considered apart from the organ to which they are referable.

42. The following preparatory examination, which is that pursued usually at the Hôtel Dieu, enables the phy-sician to curtail much labour, and so to direct his ques-

tions as to ascertain with precision the seat and nature of the disease under consideration.

Preparatory Examination.—Whilst examining the general appearance of the patient, and the expression of his countenance, the observer should at the same time ascertain the state of his tongue and pulse, should see the expectoration, if there be any, make him respire, and ask whether he feels pain in any particular part, and if he does, what has been its duration.

43. In this way, which is particularly useful in acute cases, a skilful person passes rapidly in review the principal functions of the system, and obtains some idea of the state of the organs contained in the three great cavities, which are generally the seat of all serious diseases. The countenance and general appearance are good indices of the state of the intellectual and muscular systems, the tongue and mouth mark that of the digestive organs, and the pulse indicates either the direct derangement of the organs of circulation, or their connexion with the disturbance of others. The expectoration, respiration, and voice, mark the state of the lungs and their appendages, whilst the seat of the pain of which the patient complains, and the time it has lasted, cast additional light on the information obtained by the previous inquiries.

44. The observer is still far from having ascertained the precise character of the lesion he is examining, but by means of the distinguishing signs of the diseases of the principal cavities, he will, in the first place, be able to determine whether the affection be acute or chronic; and in the next, by following the plan of examination we are now about to detail, he will learn how to give to his questions that degree of precision which is necessary for strict diagnosis and accurate description. By these means may be avoided that oversight so commonly committed in elementary works, namely, of supposing that to be known which is unknown, and of sending the reader to the perusal of a case of which he as yet knows not even the denomination.

45. When commencing to take down a case, first note the name, sex, age, and occupation of the patient; this should be done according to the form above given. In some cases it becomes necessary to state the country or district from which the patient comes, and the diseases which prevail there. For example, many cases of intermittent fevers found in Paris got the infection elsewhere, which ought to be noted.

46. In general, it is advisable to collect the principal facts and circumstances of the case in the presence of those in attendance on the patient; it tends much to inspire confidence. In hospitals, pupils should avoid fatiguing those unhappy persons whom misfortune compels to take shelter in such asylums; and when they are seized by any dangerous disorder, surely their own feelings should teach them, that it is worse than inconsiderate to repeat the same questions many times over, and often without any determinate object. It should never be forgotten that misfortune has the strongest claims on the sympathy of every man; and that every principle should prompt us not to expose ourselves to such a censure as Martial passed on one of the physicians of his time:—

> Languebam; sed tu comitatus protinus ad me
> Venisti centum, Symmache, discipulis.
> Centum me tetigêre manus, Aquilone gelatæ,
> Non habui febrem, Symmache nunc habeo.

47. The time of making the examination is not altogether a matter of indifference. When it is intended to put a number of questions, and enter into all the details necessary for a complete narrative, it is advisable to do so during the period of the remission, as then the patient can better bear the fatigue and exertion of conversation. But when, on the contrary, we wish to observe the symptoms presented by the disease, and the changes induced in the functions—in a word, the actual state of the patient, then it is better to choose the moment of ex-

acerbation, as all the symptoms are more strongly marked, and their relative importance can be more easily assigned.

48. The acute and chronic forms of disease require a plan of examination and narration altogether different. Every thing connected with the previous history should be known, and stated fully in chronic cases; it is the only means of throwing any light on the obscurity which so generally surrounds them. But in acute cases this is far less necessary; it is of very little use, when considering a case of arachnitis, or pericarditis, or when giving its history, to go back to any previous affections of the patient, or inquire what has been his usual manner of living, or what influence any particular agent may have exerted upon him. When the symptoms are urgent, our object is to ascertain speedily the nature and extent of the disease, and meet it by an energetic plan of treatment. Though this principle is true as to the treatment, it is not strictly so with regard to the prognosis, which must be modified by the existence of any particular organic disease, or hereditary predisposition, known to exist in the individual himself, or in his family.

49. After having examined the different parts of the body, in order to ascertain its internal conformation, and any malformations it may present, the existence of which might lead us to suspect others deeply seated; after having ascertained whether there be any venereal or scrofulous cicatrices, which may throw some light on the present affection, the history should then be entered on in full detail, which will be found useful, particularly in consultations.

The Narrative.—The inquiries should be directed, not only to the patient himself, but also to his family.

50. A family consists of its ascending, descending, and collateral branches. It is, then, necessary to know whether there has existed amongst any of these, but particularly in the father or mother, any habitual or chronic disease; such as hæmorrhoids, gout, rheuma-

sm, phthisis, asthma, &c. which may be in any way onnected with the present disease, or throw any light on it. It sometimes happens that a sort of general sposition to disease is transmitted from one generation another, in such a way as to determine in one, gout, -in another, phthisis,—in a third, some other disease, cording as the occasional causes may tend to develop e one or the other.

51. The history of the collateral, or even of the de-ending branches of the family, may occasionally fur-sh some useful information. Thus we lately had an portunity of seeing a female, about forty-eight years d, who had been attacked, for the third time, by apo-exy, and whose father, mother, uncle, and two mater-al aunts, had died of the same disease. What a prog-osis for her! What a dreadful inheritance for her hildren! When an intimate connexion subsists be-ween the patient and any particular member of the mily, it will be useful to ascertain whether there ex-sts also between them any similitude in person, dispo-ition, or habit; it constitutes an additional circum-tance to be added to the others; for the closer the hysical and moral resemblances between the indivi-uals are, the more likely is the transmission of the dis-osition to disease.

52. The physiological and pathological part of the arrative should next engage the attention of the bserver. He should pass rapidly over the different eriods of the patient's life, observing particularly its eptenary divisions, and dwelling on the more important eras, such as infancy, puberty, adult age, and the ritical period. He should inquire into the habits, mode f life, and state of the functions at these periods, and scertain what were the diseases to which the patient ad been exposed; such as eruptions of the scalp, erebral affections, glandular tumours of the neck or bdomen, during the first period of life; measles, small-ox, epistaxis, before puberty; catarrh, hæmoptysis, alpitations, dyspnœa, when the organs of the thorax

were assuming a certain degree of preponderance ; and lastly, he will make inquiries concerning any visceral or functional disturbances which may have occurred during the succeeding periods. It is only by accurate information on all these subjects that we can obtain such a knowledge of the peculiar disposition and constitution of the individual whose case is under consideration, as will enable us to give him advice concerning the future management of his mode of living, at the same time that it throws much light on the plan of treatment to be pursued for his present relief.

53. A knowledge of the constitution will enable us to foresee, in a great measure, the form which diseases are likely to assume, and the course they will probably run. According to Professor Recamier, constitutions may be divided into the active, passive, ataxic, and refractory. Observation has shown, that in persons who present the characters of the active constitution, namely, those whose functions and actions are performed with energy and regularity, the return to health is more prompt and easy, and their diseases are more regular and less fatal, if properly treated from the commencement ; that, in those of a passive constitution, whose functions and actions are feeble, slow, and dull, though still regular, diseases are tedious in their progress, and tardy in their return to health, and, consequently, have a tendency to remain stationary ; that in those, whether active or passive, who are of an ataxic habit, that is, who exhibit in their different vital phenomena any incoherence, irregularity, or confusion, diseases will present similar characters, will arise from apparently insufficient causes, and often assume such a formidable character as to render it impossible to arrest their progress ; lastly, in persons whose constitutions are such as to merit the appellation of refractory, that is, who manifest a certain energy in their functions, with considerable resistance in their disturbance, disease, when once excited, presents a similar tenacity, and generally resists every method of treatment.

54. The examination of the temperament should next engage attention. These have been divided into the sanguineous, lymphatic, and nervous—according as one or other of these organic systems predominates in the economy. By a knowledge of the prevailing temperament, the observer, in the first place, is enabled to know the different affections to which this peculiar organic development disposes: and the reader can more readily represent to himself the aspect and appearance of the patient.

55. The study of idiosyncrasies is probably even of still more importance, when considered in reference to the peculiar dispositions and susceptibilities of particular organs, and also to the influence which different therapeutic and hygienic agents exert on the system.

56. It is thus we can see how an organ, too active relatively to others, must be more liable to contract those diseases to which the temperament of the patient already disposes him; how cephalitis, for instance, is more frequent in sanguineous children, in whom the brain is the organ most active and best developed; and thus we can give some explanation of those affections which occur in particular parts, which, though not endowed with much activity, exhibit a peculiar susceptibility for this or that agent: for instance, some persons contract catarrh only when they suffer from cold to the feet, and others get colic during stormy weather. In this way we may pass in review the different organs of the system, and consider them in reference to their predominance of action, their susceptibility relative to climate, seasons, different temperatures, food, drink, exercises, passions, and habitual or accidental diseases, such as issues, or hæmorrhoids; finally, it is only by considerations of this nature that we can appreciate the advantage of this or that substance, or reject from our treatment a medicine that would be perfectly indicated in similar affections, and have recourse, occasionally, to others, the success of which can only be accounted for by some peculiarity of constitution in the individual.

When the narrative of the previous condition of the patient, and of the diseases to which he had been exposed, is thus concluded, it remains only to consider more particularly the affection under which he labours at present.

57. The observer first seeks to determine the causes which are presumed to have given rise to the disease, if they are appreciable; if not, he has only to state them doubtingly: he then considers the different phenomena that have preceded the attack, the symptoms which ushered it in, the signs which characterize it, its progress, its influence on the different functions; and, finally, the treatment that has been pursued, and its effects. This plan is peculiarly applicable to acute diseases, and is in fact the only one that need be resorted to.

Let us now see how this mode of analysis may be applied to the present symptoms under which the patient labours.

58. When the preparatory examination has given grounds for supposing that a certain organ, or system of organs, is particularly affected, we begin by stating the symptoms referable to it, and then pass successively in review the state of the whole body, comprising the skin, face, state of the intellectual faculties, apparatus of sensation, digestion, respiration, circulation, locomotion, secretion, and generation. When we come to treat of the diseases of each of the cavities, we shall give all the details which bear on this part of the subject.

59. After this is done, it remains only to add the changes that occur from day to day, or at more distant periods, if the disease be slow in its progress. Attention should be redoubled on the critical days; for though the doctrine of crises is almost discarded of late years, it is still supported by the authority of so many ages, that we can scarcely neglect any thing that may throw light on a subject of such importance. When any new medicament is employed in the treatment, its effects should be carefully noted. Finally, the mode in which

disease has terminated should be mentioned, ether it be suddenly, slowly, or by metastasis: so o, if it passes to the chronic form, or is followed by other affection. If the patient recovers, his progress convalescence should be briefly mentioned, as it is ays useful to know what influence the disease has erted in the state of the different functions. But if ath takes place, the fullest details should be given of appearances presented on examination: in doing s, it is not sufficient to describe merely the state of the gans known to be affected during life. If any other sue or organ present any alteration, it should be fully tailed.

The subjoined tabular view exhibits a summary of all e objects of examination referred to in these remarks.

60. After having marked the name, sex, age, physical nformation, constitution, temperament, and profession the patient, we should pass successively in review—

- History of the family.
  - Ascending.
  - Descending.
  - Collateral.
- History of the patient.
  - During Health.
    - Habits.
    - Regimen.
    - State of functions.
    - Sympathies.
    - Constitution.
      - Active.
      - Passive.
      - Ataxic.
      - Refractory.
    - Temperament.
      - Sanguineous.
      - Lymphatic.
      - Nervous.
    - Idiosyncrasies relative to
      - Morbid susceptibility,
      - Hygienic agents,
      - Medicinal agents.

- History of the present disease considered in its
  - During disease, observing the critical periods.
    - Infancy.
    - Puberty.
    - Adult age.
    - Critical period.
    - Old age.
  - Causes.
    - Predisposing.
    - Occasional.
  - Previous circumstances.
  - Attack.
  - Progress.
  - Termination.
  - Present condition.
- 2. Present state.
  - Habit of Body.—The Skin.
  - Face.
  - Intellectual System.
  - Apparatus of Sensation.
  - ——— Digestion.
  - ——— Respiration.
  - ——— Circulation.
  - ——— Locomotion.
  - ——— Secretion.
  - ——— Generation.
- 3. Termination in
  - Health.
  - Other Diseases.
  - Death.—Morbid Appearances.

METHOD OF EXAMINATION APPLICABLE TO DISEASES OF THE BRAIN.

61. We shall now take it for granted, that by his preparatory examination the observer has ascertained sufficient information to induce him to *suspect an affection of the brain or its investments.* It remains for him, then, to verify his opinions, by examining carefully all the organs and functions which are subject to the immediate influence of the cerebro-spinal system.

62. The brain, like all the principal organs of the onomy, presents, when attacked by disease, a disbance, more or less evident, of the functions over ich it presides; hence it is to these functions (at the ad of which we place the intellectual faculties, and se which belong to the systems of sensation and comotion), that the observer ought particularly to ect his attention. The digestive apparatus should xt be attended to, as its sympathetic connexions with brain are so many and so important. As to the culation and respiration, they are but very indirectly, d rather remotely, influenced by affections of the gans now under consideration. The expression of the untenance, and the position of the patient, should ways be attended to, whenever the brain is affected. fore we enter on each of these subjects in detail, it ll be necessary to say a few words on some precauns which should be observed, and which should prede the examination of the symptoms.

63. As the diagnosis of diseases of the brain is in neral difficult, and as several of them may be conunded with one another, or with affections of other gans, it is particularly necessary to attend to the preous history of each case, as it will elucidate the manr in which it set in, its progress, changes, the state other organs coincident with these changes, more rticularly that of the digestive apparatus. The obrver will thus avoid the several mistakes which arise m the resemblance that exists between acute inflamations of the brain, and some derangements of the gestive tube. He should also attend to the nature of e causes which have induced the affection of the brain; will recollect how constantly they are produced by ncussion of the cranium or vertebral column, insotion, hypertrophy of the heart, acquired and hereditary spositions to cerebral congestion, abuse of spirituous juors, the use of narcotics, mental anxiety, &c.

64. In every case the skull and spinal column should examined, to ascertain whether there be any mal-

formation, tumour, or lesion, to which the present affection may be referred. If the patient be a child, the temperament should be noted, and the size of the head, if it be large; the existence of worms, and the time that has elapsed since dentition. Increased vigilance will of course be required, if any organ of the thorax or abdomen be engaged, for then the cerebral affection may be obscured and masked by the other disease. After these preliminary inquiries, we may now enter on the examination of each of those systems of organs to which we have already alluded, and which we now proceed to consider in detail.

65. *Intellectual Faculties.*—It is usual to commence by ascertaining the state of the patient's faculties when he was in health, in order to distinguish what is really caused by the disease. Questions should, then, be put to the patient, to learn how far his intellects are impaired. His answers will determine whether his faculties are, as it were, exalted, deranged, or, on the contrary, merely weakened. To the two former heads may be referred that delirium which is termed hallucination, when it takes one particular direction.

66. Delirium is presented to us in a variety of forms, for sometimes it is manifested only by a change in the patient's character; for instance, making a man habitually serious to become gay, or a mild and calm person to be impatient, irritable, or vicious; sometimes it is marked by a sombre, or even savage expression, by phrenzied exclamations, singing, loquacity, incoherent expressions, ideas of the wildest ambition, a real state of mania: at other times there is an incoherence in the answers, some of which may be correct enough, while others are confused, and destitute of meaning; and lastly, the patient may be in a state of extreme agitation, making continual efforts to escape from his bed. In general, the degree of the delirium is proportioned to that of the general reaction in acute cases, and varies as this latter does. The delirium may be continued or intermittent, periodic or irregular, subject to particular influences, or returning

without any assignable cause. A better idea of the patient's case may, in some instances, be given by citing some particular word or phrase of his, than by any general description, for these are often peculiarly expressive. These circumstances, which generally concur with other indications of excitement, are referable to irritation of the brain; but they may also depend upon a reaction of such organs as sympathize with the brain, particularly the digestive tube. This is the reason why we have above insisted so much on the necessity of having a perfect knowledge of the manner in which these diseases set in. In infancy, as the intellects are not developed, it can scarcely be said that there is delirium; hence we must attend to the other cerebral symptoms.

67. We have already said that there is an opposite state to that here described, and which depends on diminished action, and loss, more or less, of cerebral power. This state is, in most cases, consecutive on the former; in others, however, it sets in suddenly, and indicates that the organization of the brain has been deranged from the commencement of the attack. This is marked by slowness and difficulty in giving answers, drowsiness, more or less, and then somnolence, which may increase to a state of profound carus. Its degree should be stated; whether there be merely a disposition to drowsiness, or to actual coma, or whether it is possible to rouse the patient by stimulation. This may be ascertained by pinching different parts of the body, or by making slight percussions on the arm, or even the face, by which we may form some estimate of the condition of the nervous sensibility.

68. Some attention should be directed to ascertain the state of the memory, and the mode of articulation. The utterance may be hurried, quick, impeded, or even altogether suppressed; in which latter case it will be well to ascertain whether the aphonia arises from an impediment to the free motions of the tongue, or a want of cerebral power, caused by a lesion of some part of the brain.

69. *Sensitive System.*—This may be divided into wo

great heads—the organs of sense, and the general sensibility.

70. The symptoms most usually observed are referable to disturbance of the sight, hearing, and touch. There may be a greater or less degree of diminution in these functions, or, on the contrary, an exaltation of them; or finally, there may be aberrations or illusions. When there happens to be a diminution, or complete suspension of the power of hearing or seeing, as in coma, for instance, we ought to ascertain whether it is real, or only apparent. This can be done by suddenly exposing the eye to a strong light, or the ear to a loud sound.

71. Though the senses of smell and taste seldom furnish any assistance to the diagnosis of diseases of the brain, still we may examine their condition by bringing some pungent odour in contact with the pituitary membrane, or placing on the tongue some sapid substance.

72. In diseases of the brain the sensibility is variously affected, and requires very particular attention. As to the eye, its sensibility may be increased, which depends either on the impression of the air on the conjunctiva, in which case, if there be ophthalmia at the same time, it becomes necessary to state it, or on the stimulus produced by the light on the brain, through the intervention of the retina: these two causes should be carefully distinguished.

73. By tickling the interior of the nasal fossæ, and the surface of the tongue, we may determine whether their sensibility (considered as the result of the sense of touch generally diffused over the body,) remains unimpaired.

74. The nature and character of the headache should be particularly attended to, as it is one of the most constant symptoms: it will be necessary to ascertain exactly whether pain is felt in the internal ear, and also if there be any discharge from the auditory tube, which is sometimes of consequence, as indicating an alteration on the lower surface of the cerebellum.

75. The sensibility of the limbs is sometimes increased, which is marked by shooting pains, by painful

numbness, and creeping, which follows the course of the large nervous trunks: this increased sensibility exists sometimes in the muscles also, particularly when they are permanently contracted. In such cases we ought, as far as possible, to indicate the tissue affected.

76. As to the sensations of creeping, numbness, or of different "auræ," which occur in the limbs during the course of certain affections of the brain, they require a careful examination to determine on what tissue they commenced, or whether the skin only is engaged.

77. The state of the sensibility should then be ascertained in the different regions of the body particularly in the chest and abdomen, as well as in the extremities. This examination is so much the more necessary, as in inflammation of the central parts of the brain, for instance in the corpus callosum, septum lucidum, and fornix, the sensibility is sometimes so much increased in the integuments of the body that the slightest pressure produces acute pain: this should be distinguished from inflammation seated in the abdomen itself.

78. When the opposite state, or that of diminished sensibility, takes place, as in the case of effusion, or disorganization of the substance of the brain, the different parts of the body should be examined, as has been above stated; and we ought to have recourse to *pinching*, in order to determine the degree in which the sensibility is diminished. In all such cases comparative trials should be made at both sides of the body, and the result stated in the report.

79. *Apparatus of locomotion.*—Its examination should follow that of the sensibility. After commencing with the face, the state of the eyes, mouth, neck, and limbs, should be successively reviewed.

80. The part of the eye which should be most attended to is the pupil, which may be either dilated or contracted, immoveable or dilatable, or, in some cases, may present constant oscillations.

81. The globe of the eye itself may be agitated by

convulsive or rotatory motions, or may present a change in the direction of its axis, constituting strabismus.

82. This last phenomenon depends on a permanent contraction of the muscles of the eye, at the side affected, or on paralysis of their antagonists. The eye-lids may be closed, which depends either on a paralysis of the elevator of the upper lid, or on the contraction of the orbicularis muscle, which ought always to be stated. The contraction of this latter muscle, which is produced by the effect of the light on the eye, should not be confounded with that spasmodic effect which is altogether involuntary, and depends on a deep seated irritation in the brain.

83. The alæ of the nose are in some cases immoveable at one side, and applied closely to the septum. This arises from paralysis of the muscles at that side, and therefore deserves to be noted.

84. When the utterance is impeded, indistinct, or altogether lost, we should ascertain whether it arises from difficulty in moving the tongue, lips, or larynx, or whether it depends on want of cerebral power. For this purpose we should endeavour, by calling aloud to the patient, to excite to action the different sets of muscles that contribute to the act of speaking.

85. As to the mouth, it presents several symptoms deserving attention. They consist of trismus or tonic contraction of the elevators of the lower jaw: the direction of the point and base of the tongue may be changed, or the position of the commissure of the lips may be altered: this latter deviation sometimes takes place on the affected side, in consequence of a spasmodic contraction of the commissure, which draws the mouth upwards and outwards; at others the muscles are paralysed, when the lip becomes depressed and pendant; finally, it may exist at the same side, and be caused by the muscles that remain unaffected. In general, when there are any spasmodic attacks, the examination of the commissure of the lips, as well as of the other muscles, should be made during the intervals, for while they

continue, the two sides being sometimes convulsed, it will not be possible to ascertain the distinctions above stated.

86. The head is sometimes drawn backwards, or inclined to one side; attention should then be paid to the muscles of the neck which are contracted or relaxed. In some cases the larynx experiences continued motions up and down.

87. The trunk of the body may also present particular phenomena, such as momentary spasms of the muscles of respiration, retraction of the body backwards, or bending forwards; these latter usually depend on irritation in the spinal column.

88. The power of moving the upper and lower limbs, particularly the former, may be diminished or lost. This paralysis, which may exist with or without rigidity, depends, according to some writers, on a lesion of the optic thalami and posterior lobes of the brain, or of the corpora striata and anterior lobes; the former, namely, that of the optic thalamus, determines paralysis of the upper extremities; the latter, namely, that of the corpora striata, produces paralysis of the lower limbs. We should ascertain whether the immobility of the limbs arises from a state of inaction or general weakness; whether it is confined to a certain region, or extends to all; whether the limbs retain any position that may be given to them, as in catalepsy; or whether, on the contrary, there is a real paralysis. When this latter exists, we should examine whether the muscles are flaccid or rigid, whether the flaccidity is total or partial, or whether the limb falls down *en masse* when it is raised up: when rigidity exists we should ascertain whether it is confined to one part, as in trismus, or extends to the whole body, as in tetanus. In some cases the muscles are alternately in a state of rigidity and relaxation, as in convulsions; in others, the limbs are continually agitated, as in chorea, the intellect remaining unimpaired, but incapable of controlling the motions. And, lastly, the convulsions exist in certain muscles only (and then momentarily), producing *subsul-*

tus tendinum. We may here observe, that those irregular motions which occur during delirium should not be considered as convulsions, as they have a real object, and do not belong to movements merely involuntary. As to those motions which are termed automatic, they should be noted; such, for instance, as when children in hydrocephalus carry their hands frequently to their heads. In the *exposé* of these various phenomena, any differences that may exist between the state of the two sides of the body should not be overlooked.

89. *Digestive System.*—The digestive organs do not ordinarily present many symptoms which may be considered as the direct effect of diseases of the brain. The most important, however, are vomiting, which sometimes occurs at the commencement of these affections, constipation, and retention of urine, or the opposite state of involuntary evacuation, which occurs when the affection is carried to a great degree, or when the spinal column is engaged. When there is vomiting, care should be taken to examine the state of the mouth and tongue, as well as the abdominal viscera, in order to determine whether it is purely symptomatic of the affection of the brain, or depends on inflammation of the stomach.

90. *Circulating system.*—The disturbance referable to this part of the economy, consists in alterations of the natural rhythm of the pulse, in increased frequency, or a greater or less degree of slowness. Sometimes it may become irregular or intermittent; but this latter modification is of trifling importance, as it contributes little or nothing to the diagnosis of cerebral affections. We may remark, however, that slowness of the pulse is chiefly connected with certain lesions of the substance of the brain, and with considerable effusions, whilst increased frequency accompanies rather the inflammatory condition of the membranes, and the first stage of inflammation of the substance of the brain, particularly when this is complicated with gastro-intestinal inflammation.

91. *System of Respiration.*—We may make somewhat the same remark on this system as on that of the circula-

tion, as to the degree of its connexion with affections of the brain. The respiration may be stertorous, interrupted, sighing, elevated, or may become very slow, when the disease proceeds to an extreme degree. It becomes laborious and difficult when the spinal cord is injured, in a greater degree in proportion to the nearness of the affected part to the region of the neck; and suffocation may be threatened, if it occurs opposite the fourth and fifth cervical vertebræ, below the origin of the phrenic nerves. In some cases the expiration is made at one commissure only, the mouth being closed; this is what has been termed "*fumer la pipe.*" After having in this way reviewed the different systems of organs, the narrative may conclude with stating the position of the patient's limbs, as well as that in which he lies.

92. *Urinary System.*—The state of the bladder should never be neglected; it is sometimes paralysed. The secretion is then retained in the bladder, acquires an ammoniacal fetor, is absorbed into the system, and produces that peculiar fetor so common in affections of the brain, which has been compared to the smell of mice. The urine may be thready and mixed with mucus, arising from inflammation of the lining membrane of the viscus, caused by the retention of the fluid in its cavity. When the spinal column has sustained any injury, particular attention should be paid to the urinary organs, as paralysis of them is one of the most constant effects of the diseases of the medulla spinalis.

93. *Aspect.*—The examination should conclude with a slight notice of the countenance, which may be described either in reference to its general expression (which may be furious and menacing, or merely fixed and denoting surprise), or to each of its parts: thus the eyes may be red and brilliant, or dull, and covered with mucus; the upper lids may be contracted, moveable, or paralysed; the mouth may present a deviation at its commissure; hence the great variety of expression which the countenance presents in diseases: it may be tranquil, immove-

able, gay or gloomy; or it may express indifference, stupidity, or total insensibility.

94. *Position and state of the body.*—The manner in which the patient lies, the state of agitation or calm in which he is found, the position of the head and limbs, the disposition to sink down in the bed, &c. may furnish some data for distinguishing the diseases of the brain. Finally, when there is any reason to suspect an affection of the cerebellum, when the patient presents any external marks on the occiput, or when he complains of pain in that part, attention should be directed to the genital organs, to see whether there be priapism.

95. *Recapitulation.*—In recurring to what has been here stated, we see that the observer should attend to the age of the patient, which in some cases will assist in distinguishing apoplexy from inflammation of the brain, as the former seldom occurs before the age of forty, while the latter may arise at any period of life. He should examine the skull and vertebral column, to ascertain whether there is any external injury or malformation; he should attend to the mode in which the disease has set in, its progress and symptoms; then he should examine the present condition of the patient, commencing with the intellectual functions, having in the first instance ascertained their state in health. Delirium and its character should next engage his attention, and also the state of stupor, which may vary from mere somnolence to complete coma; from a slight slowness in answering questions, to total loss of understanding. The manner of articulation should also be attended to. After inquiring whether there is any pain or particular sensation in the head, or vertebral column, the examination concludes with a review of the organs of sense, as the sight, hearing, and taste.

96. The observer then passes in review the state of the pupils, of the globe of the eye, eye-lids, lips, tongue, neck, upper and lower limbs; he then examines the muscular system, to determine whether there is con-

vaetion, convulsion, or paralysis, in any particular art; or whether these phenomena are continued or ntermittent. In drawing up the report of the ease, he ·ill follow precisely this same arrangement.

97. After having thus investigated the condition of .ne three great functions which are affected by diseases f the brain, the observer will ascertain the state of the ongue, stomach, and bowels; he will state the existnce of constipation or vomitting, and mark their symptoms, with so much the greater accuracy, as affeetions of these organs very frequently simulate those of the rain He may eonclude with a rapid glanee at the tate of the respiration, the pulse, action of the heart, tate of the bladder, expression of eountenanee, and osition in which the patient lies.

98. When the medulla spinalis, or cerebellum, appears to be affected after some external injury, attention should be paid to the digestive, respiratory, circulating, and digestive systems. But that the report of the ease may not be incomplete, he should examine the whole of the viscera, and state whether they present any thing remarkable. This is the only way by which complete and accurate cases can be drawn up, capable of still farther elucidating the pathology of the brain, which has latterly made so mueh progress.

METHOD OF EXAMINATION APPLICABLE TO DISEASES OF THE CHEST.

99. After having examined the external conformation of the thorax, and inquired whether pain is felt in any particular part, and learned its seat and character, we should proceed to investigate the phenomena which result—

1st. From the act of respiration;
2d. Those which depend on the voice;
3d. The product of expectoration;
4th. The symptoms given by percussion;
5th. Those which are referable to the heart and its connexions.

OF THE PHENOMENA WHICH RESULT FROM THE ACT OF RESPIRATION.

100. *In Health.*—Inspiration and expiration are performed slowly, and with ease, none of the muscles appearing to make any particular effort: they succeed each other regularly, their rhythm is constant and uniform; all the ribs are alternately elevated and depressed, and the dilatation and contraction are equal at both sides, except in cases of deformity of the thorax. Respiration in children is performed in a great degree by the motion of the ribs alone; in adults, by that of the ribs and diaphragm; and by this last muscle alone, in old persons in whom the cartilages have become ossified.

101. The younger the subject is, the more frequent is the respiration. Thus, during the first year, an infant respires about thirty-five times in a minute, but an adult makes about eighteen or twenty respirations in the same time. Its frequency is greater in women, and persons of a nervous or irritable habit.

102. *In Disease.*—The movements of the chest present many varieties, which may be referred to the following heads: they may be frequent or unfrequent, quick or slow, regular or irregular, great or small, equal or unequal, easy or difficult, complete or incomplete; and, finally, the respiration may be abdominal or thoracic. All these phenomena are within the reach of the ordinary means of examination; but auscultation conducts us to the knowledge of others, which we now proceed to detail.

103. Auscultation may be made either by applying the ear to the walls of the thorax, or by means of the stethoscope invented by Laennec.

104. Immediate auscultation is more particularly useful to persons who have not acquired much experience in this mode of examination; for when the phenomena have been rendered sensible by the application of the ear, and the observer has formed some idea of them, it becomes more easy for him to seize their minute shades, than if he had commenced in the first instance by em-

ploying the stethoscope. However, it should be remembered that there are cases in which the use of the instrument is altogether indispensable, where, in fact, the ear cannot be applied; for instance, immediately above and below the clavicle, in the hollow of the axilla, and beneath the mammæ in females. Besides, the head can scarcely follow the movements of the chest, as it is elevated and depressed; and, even if it could, the friction it produces must render the sounds somewhat confused.

105. When using the stethoscope, it should be held like a writing pen, the fingers being so placed on the instrument as to feel at once its extremity, and the point of the thorax to which it is to be applied. It should be also placed evenly upon the surface, and perpendicular to it.

106. Before we begin the examination, or at all events before we note its results, we should wait until any impression this process may have made on the patient shall have passed away; for, if this precaution be necessary in examining the state of the circulation by means of the pulse, it is no less so when investigating the respiration by the stethoscope. The phenomenon which exists in the healthy state of the organs should first be studied, in order that they be not confounded with those which are produced by disease; and that their various changes may be accurately estimated, or their absence determined, which is by no means an unusual occurrence.

107. *Examination of the respiration in the healthy state.*—When examining the respiration, the funnel should be removed from the end of the cylinder. On applying its extremity to the chest, we perceive in a healthy adult, during inspiration and expiration, a slight, though distinct murmur, marking the entrance of the air into the cells, and its passage out of them. This murmur is loud in proportion to the depth and frequency of the respiration—to the youth of the subject, to the thinness of the walls of the thorax, and completeness of their dilatation. In females it is more strongly marked than in males, and still more so in children, whence the term

"*puerile*" is applied to respiration when it becomes very sonorous.

108. The respiratory murmur is most perceptible in the hollow of the axilla, in the space between the anterior border of the trapezius muscle and the clavicle, immediately beneath this bone, and at the inferior and posterior part of the chest; for these are the parts in which the lungs are nearest to the surface. Opposite the trachea, larynx, and root of the bronchi, the sound of the respiration is much more loud and distinct; it is not unlike that of a bellows, and gives the idea of a considerable column of air passing through a tube of large diameter; the air also appears as if sucked in from the cylinder, during inspiration, and expelled again during expiration. To this peculiar sound the term "*tracheal* respiration" is applied.

109. *Examination of the Respiration in Disease.*—The respiratory murmur may be stronger or weaker than natural; may be altogether suppressed or heightened, so as to resemble what we have described as the "*tracheal*" respiration; and lastly, it may be pure, or mixed with some of those various sounds to which the term "*râle*" has been applied.

When the respiration becomes more strong than natural, it assumes the character it manifests in children, and therefore is termed by Laennec "*puerile respiration.*" This intensity of sound is not owing to a lesion of the part of the lung in which it is heard; on the contrary, it is heard only in the healthy parts, whose action becomes momentarily increased, to supply that of the diseased parts. Thus, in pneumonia, we usually find the "puerile" respiration in those portions of the lung which are not yet attacked by the inflammation.

110. As the respiratory murmur presents a number of varieties even in the healthy state, it is only by comparing different parts of the lungs that we can judge of any diminution of its intensity that may occur. It is always easy to make this comparison; for the respiration is seldom weakened in the entire of the lung, or in both

lungs at the same time. But its degrees vary from a slight weakening of its natural intensity to total suppression. A diminution of the movements of the thorax seems to be the most usual cause of this weakening of the respiratory murmur: it sometimes arises from a partial obstruction of the smaller bronchial tubes, either by a thickening of their mucous membrane, or by the presence of some viscid matter. It is also found to occur in cases in which false membranes are yet soft, and just beginning to be organized.

111. Complete suppression of the respiratory murmur arises from various causes. It occurs when the lung becomes impermeable to the air, or when there is interposed between it and the walls of the thorax, any liquid or gaseous exhalation, which prevents the sound from being transmitted. It seldom happens that the sound is suppressed through the whole extent of a side of the chest. Some trace of it can almost always be discovered near the clavicles, and opposite the root of the lung; and probably it is never altogether inaudible at the latter of these points.

When treating of the natural phenomena, we described the "*tracheal*" respiration, and indicated the points in which it is heard. It sometimes happens that a similar sound is emitted from other parts, besides those in which it is audible during health. This occurs either when there are cavities of a certain extent communicating freely with the bronchi, or when the tissue of the lung becomes indurated, and so transmits more readily the sounds which the air produces in passing through the large bronchial tubes. In the parts of the lung which remain unaffected, we find that the respiration has become "*puerile.*"

112. The respiratory murmur, whatever be its degree of intensity, may be pure, which indicates that the air-tubes are free from obstruction; or it may be blended, and, as it were, disguised by other sounds, to which the term "*râle*" has been applied. By *râle, rattle, or wheeze, is understood any sound produced by the circulation*

of the air in the bronchi and air-vesicles, different from that murmur which it determines in the healthy state.

The "râle" seldom occupies the entire extent of the lung; it is usually audible only in a certain part of it, the respiration remaining natural, or becoming "*puerile*," in the rest. *They indicate either a contraction of some part of the bronchial tubes, or the presence of a fluid which obstructs them or the air-vesicles.* The "râles" are divided into five species;—1st, the "râle muqueux;" 2nd, "râle sonore;" 3rd, "râle sibilant;" "4th, râle crepitant humide;" 5th, râle crepitant sec."

113. The "*râle muqueux*" (mucous rattle or wheeze) is produced by the passage of the air through sputa accumulated in the bronchi or trachea, or through softened tubercular matter. The character of the sound indicates that the fluid which fills up the air-tubes is unctuous, but not tenacious. Sometimes it is weak, and audible only from time to time; at others it is rather loud and continuous. In the former case the air meets only at intervals portions of mucus, which determine the sound; in the latter the bronchi are almost entirely filled with it. When carried to a very high degree, it constitutes that gurgling sound ("*gargouillement*,") so often heard in the throat of persons dying, and which arises from inability to cough up the accumulated mucus. This term has also been applied to the loud murmur which is produced by the agitation of the matter of tubercles, or puriform sputa, by the passage of air through them. This "râle" occurs in catarrh and hæmoptysis, also in pneumonia and phthisis. [In the two first cases it arises from the passage of the air through mucus or blood, effused in the bronchi: in the two last it indicates its passage through matter contained in a tubercular cavity, or a pulmonary abscess: in such instances the breathing is said to be *cavernous*.]

114. The "*râle sonore*," or *ronflement* (sonorous wheeze or rattle) consists of a sound more or less grave, and occasionally very loud, resembling sometimes the snoring of a person asleep, at others the sound

of the bass string of an instrument when rubbed by the finger, and not unfrequently the cooing of a dove. It seems to be caused by a contraction of the bronchial tubes, by a thickening of their mucous membrane, or by some change in the form of these canals, induced probably by the thickening of the spur-like process or folds of membrane at the points of division of the bronchi; at least this change is almost constantly observable in subjects that have died during the existence of chronic catarrh, of which this "râle" is characteristic.

115. The "*râle sibilant*," or *sifflement* (sibilant rattle or wheeze), consists of a slight, though prolonged hissing sound, which occurs either at the termination or commencement of inspiration. It may be grave or acute, dull or sonorous. [It is not unlike the sound produced by triturating an unctuous substance in a mortar, or by rubbing oil or paint between two pieces of marble.] These two varieties may exist at the same time in different parts of the lung, or may succeed each other at variable intervals, in the same part. It is, owing to the presence of mucus, thin and viscid, but not abundant, which obstructs, more or less completely, the smaller bronchial ramifications which the air has to pass through before it arrives at the air-cells. This "râle" seems to indicate a more serious affection of the lungs than the one last described, inasmuch as it is seated in the more minute bronchial ramifications; hence, when it extends to any considerable portion of the lung, it is attended by great difficulty of respiration. [When the sound is acute, and prolonged, it may arise from a thickened state of the mucous membrane lining some of the smaller bronchial tubes.] It is during the existence of this "râle," that the sputa present that arboreseent appearance which resembles so much the form, dimensions, and ramifications of the small bronchial tubes, from which they have been expelled by the efforts of coughing. It occurs in the first stage of bronchitis.

116. The "*râle crepitant humide*" (crepitant rattle or wheeze) resembles very accurately the crackling or

crepitation of salt, when thrown into a heated vessel, or that emitted by a piece of dried lung, when pressed between the fingers. It depends on an exhalation of blood on the internal surface of the air-cells; [it conveys an impression as if the effused fluid were diluted with water, and the bubbles caused by the passage of the air very minute. It is readily distinguished, and when once clearly heard, cannot readily be mistaken afterwards, or forgotten. This sound is characteristic of pneumonia in its first stage; it ceases to be audible when the part affected becomes hepatized, but recurs again if resolution of the inflammation takes place. It occurs also in œdema of the lung, and sometimes in hæmoptysis; but the bubbles formed by the displacement of the air appear larger and more humid, so that Laennec has given the epithet *sub-crepitant* to this variety.]

[The "*râle crepitant sec*," or "*craquement*," is audible in inspirations only, and gives the idea as if the air was passing into air-cells unequally dilated, and at the same time dry on their surface. It is not unlike the diminutive of that caused by breathing into a dried bladder. This sound is characteristic of emphysema of the lung, and is similar to that perceptible in common cases of subcutaneous emphysema, but weaker.]

117. These are the different "râles" which the stethoscope enables us to recognize. It would appear from this description of them, that their characters are so strongly marked that they cannot be confounded or mistaken one for the other; but still it frequently happens that their differences are not so striking, and that they glide into each other by a sort of transition indicative of a mixed lesion, or one more nearly allied to one than the other. It is by habit and practice alone that we can learn to appreciate these shades; words cannot convey an adequate idea of them.

OF THE PHENOMENA WHICH DEPEND ON THE VOICE.

118. When examining the voice, the funnel should be

retained in the extremity of the cylinder, and then the phenomena will be found to vary: 1st, according to the points at which they are examined, and, 2nd, according to the natural character of the voice.

When a person speaks or sings, his voice thrills in the interior of the chest, and produces in its whole extent a trembling motion, which we can readily perceive on the application of the hand. This phenomenon is not of much importance, and seldom demands any particular attention. However, when a large cavity happens to exist, the trembling becomes so forcible as of itself to make us suspect its existence. When the cylinder is applied to the thorax, we hear a confused resonance of the voice, the intensity of which varies in different points of its extent. It is most distinctly heard in the arm-pit, at the back, between the internal border of the scapula and the vertebral column, and anteriorly at the angle formed by the clavicle with the sternum. We do not hear any thing distinct or articulate; it is rather a sound more or less confused, which seems to waste itself against the walls of the thorax. In other parts of the chest, particularly posteriorly and inferiorly, the sound is much more weak, and produces only an indistinct murmur. It is in all cases rendered more manifest where old adhesions exist.

In persons whose voice is deep and grave, the degree of resonance is greater, but it is confused, and nearly equal at all points of the thorax; but in females and children, whose voice is acute, it is clear and distinct.

119. *In disease, the phenomena furnished by the voice* are referable to three heads: Resonance, Pectoriloquy, and Ægophony. By the term resonance is understood a thrilling of the voice more loud than natural, or its existence in a part in which it is not heard during health. It sometimes becomes so strong that the sound seems to be produced at the very extremity of the cylinder, which is placed on the thorax, but it never conveys the impression as if it traversed the length of the tube to reach the ear of the observer. A thickened and har-

dened state of the lung, caused either by a mass of crude tubercles, or by inflammation, produces this phenomenon, by rendering the lung a better conductor of the murmur of the voice in the bronchi. Hence the origin of the term "*bronchophony*." This symptom, though not usually of much importance, becomes occasionally of considerable value, when it co-exists with phenomena furnished by other means of examination, and also as enabling us to make a comparison between the state of the two sides of the thorax.

120. *Pectoriloquy*.—This phenomenon is said to exist when the voice of the patient, distinctly articulated, seems to issue from the point of the chest on which the cylinder is applied, and traverses its whole length to strike the ear of the observer with its natural tone, or probably more strongly. These are the circumstances which constitute *perfect* pectoriloquy; but it admits of two other degrees, namely, the *imperfect* and the *doubtful*. It is termed *imperfect*, when the voice thrills strongly under the cylinder, seems to approach the ear, but never traverses the whole length of the tube. And, lastly, it is said to be *doubtful* when the voice seems acute, and suppressed like that of a ventriloquist, and is arrested at the thoracic extremity of the tube; thus approaching to the character of simple resonance. [Pectoriloquy indicates the existence of a cavity in the lung, whether formed by tubercle, by pneumonic or gangrenous abscess.]

121. Pectoriloquy presents some varieties, which depend on the tone of the voice, the size and form of the excavations, the firmness of their walls, the degree of facility with which the air can penetrate them; and, finally, the existence or non-existence of adhesions with the pleura costalis.

122. The more acute the voice is, the more evident does the pectoriloquy become; hence, in persons whose voice is grave and deep, the thrilling or vibration of the walls of the thorax may be sufficiently intense to mask it, and render it doubtful.

123. In cases of aphonia, the pectoriloquy is not entirely suppressed. It sometimes happens that we can distinguish better what the patient endeavours to express, by placing the cylinder on the point corresponding to the excavation in the lung, than we can by the naked ear at the same distance.

124. The pectoriloquy is sensibly affected by the size of the cavities. Thus, when they are unusually large, it becomes changed into a very full and grave sound, similar to that of the voice transmitted to some distance through a tube, or cone of paper. In very small cavities, on the contrary, it becomes doubtful, particularly when the parts of the lung which surround them are still permeable to the air.

125. The more dense and firm the walls of the excavation are, the more perfect is the pectoriloquy. It sometimes acquires even a metallic tone when the cavity has become lined by a membrane whose structure approaches that of fibro-cartilage.

126. It is also rendered very distinct when the cavity is superficial, and its walls thin, and adherent to the pleura costalis; but when there is no adhesion, and the sides of the cavity become compressed together during expiration, the pectoriloquy becomes doubtful: the existence of the excavation must then be ascertained by other symptoms.

127. Again, its force becomes increased, and the voice seems as if transmitted through a tube, when new cavities begin to communicate with those already existing; but if the excavations become very numerous, and tortuous, the sound is rendered somewhat confused and indistinct.

128. The less liquid the cavity contains, the more evident is the pectoriloquy, for then the communication with the bronchi is usually open, and allows a free passage to the air.

129. If this communication be obstructed for any time by the accumulation of matter in the bronchi, the

pectoriloquy is rendered doubtful, and acquires somewhat of an intermittent character.

130. It sometimes happens that we can find scarcely a single individual with pectoriloquy in the wards of an hospital, though at the previous visit there had been several; in such cases we observe, that in the greater number of the patients the expectoration had been very much diminished, or altogether suppressed.

131. *Ægophony.*—This phenomenon consists of a strong resonance of the voice, which is more acute and sharp than that of the patient, but never seems to traverse the cylinder, as pectoriloquy does; its tone is thrilling and tremulous, like that of a goat; whence the term is derived. [αιξ, a goat; ψωνη, the voice.]

132. Though its limits are usually circumscribed, they are not so much so as those of pectoriloquy; it is found between the base of the scapula and the vertebral column, towards the inferior angle and external border of that bone, and sometimes in the direction of a line which may be conceived to pass from its centre to the sternum, following the direction of the ribs. When ægophony exists at both sides at the same time, it is difficult to determine whether it is produced by disease; for in some persons the natural resonance of the voice presents this acute and tremulous character at the root of the lungs. If old adhesions exist at one side of the chest, the ægophony becomes much more evident.

133. Ægophony, though it may vary in its force and extent, always indicates the existence, in the cavity of the pleura, of a moderate quantity of fluid, or of false membranes, somewhat thick and soft; it ceases when the effusion becomes too considerable: hence in the former case it indicates pleurisy in its first stage; and in the latter, it marks its passsage to the chronic state, if the general symptoms still continue, after the cessation of the ægophony; but it is not a sign of its resolution if these symptoms cease as it disappears.

134. Ægophony does not prevent us altogether from

hearing the respiratory murmur, when it is not suppressed by hepatization of the lung.

135. The *Metallic tinkling*, and *Amphoric Buzzing*, are very remarkable phenomena, with which we shall conclude this account of the signs furnished by the voice and respiration.

The metallic tinkling, or "tintement metallique," resembles the sound produced by any very small hard body striking against a metallic or glass cup. When the phenomenon is not so strongly marked, it produces only the *metallic resonance;* lastly, the respiration also may assume this character, in which case it resembles the murmur produced by air blown into a metallic vessel with a narrow aperture; these different sounds cease occasionally for a short time, but recur soon after.

136. The metallic tinkling occurs when there exists a large excavation filled with air and fluid, communicating with the bronchi, and is heard when the patient coughs or speaks.

[137. *Metallic Tinkling—rationale of.*—It is caused (Laennec, tom. i. p. 110) by the tremulous motion given to the air which rests on the surface of the fluid, and indicates either a tubercular cavity, partly filled with a very thin matter, the rest being occupied with air, or the existence of a serous or purulent fluid in the pleura, conjointly with some air, as in pneumothorax. To the production of the phenomenon in the latter case it is necessary that the cavity of the pleura should communicate with the bronchi by a fistulous opening, such as may be caused by a tubercular abscess breaking on the surface of the lung, or by a gangrenous slough, opening on the one side into the pleura and on the other into a bronchial tube. This phenomenon, then, is characteristic of a triple lesion; viz. a cavity in the lung, an effusion into the pleura, and an intervening fistula.]

The metallic resonance and respiration indicate, in addition to the fistulous communication between the

bronchi and pleura, an effusion of a gaseous fluid into the cavity of that membrane.

[138. Laennec, at the time of making the statement in the last clause of the preceding section, seemed to feel that it was pressed a little too far, for in the following page (112) he admits that this tinkling sound may occur in cases in which no communication exists between the bronchi and the pleura. Thus in a case of simple pneumo-thorax—namely, where there is neither a cavity in the lung, or fistulous communication between the bronchi and pleura, the pathological condition of the chest being confined to this,—that the lung at one side is compressed, that a space exists between it and the wall of the chest, and that this space is occupied partly by air, and partly by a fluid. In such a case as this it occasionally happens that if the patient is made to sit up, in order to examine him, a drop of fluid becoming for a moment attached to, and as it were suspended from, the surface of the pleural cavity, at its upper part, will soon fall down on the surface of the fluid in the lower part, and produce a minute tinkling sound, just as if a single drop of fluid were let fall into a bottle about three parts filled with air and the rest with water. This, however, is but a single mode of producing the sound, and not at all the most frequent one. When, as in the cases above noticed of a fistulous communication between the bronchi and the pleura, the cavity of the latter contains some air as well as serous or purulent fluid,—when, I say, the air, either in the effort of speaking or coughing, or in ordinary breathing, passes through a small fistulous opening, and enters the pleural cavity, beneath the surface of the fluid, it necessarily becomes broken into small masses or bubbles, and as these rise to the surface, and there burst, they produce a succession of minute sounds, which when reflected by the sides of the cavity give rise to the tinkling. If, however, the fistulous opening be large, or if there be several of them, the sound will resemble that caused by blowing into a bottle.

This is called the *amphoric respiration*. Now as the size of the fistulous communication may be diminished by being more or less blocked up by mucous or purulent fluid, the metallic tinkling may pass into the amphoric respiration, and *vice versâ*; or both may be recognizable at the same time. Laennec's remarks on these phenomena deserve an attentive perusal. See his Treatise DE L'AUSCULTATION MEDIATE, tom. i. p. 109.]

[139. *Friction of Ascent and Descent.*—During inspiration and expiration a dull sound is occasionally heard, somewhat like that which may be caused by rubbing the finger against a hard substance, such as bone. It would appear as if a small body ascended and descended at the same time, rubbing against something else. This may be termed *murmur frictionis*; Laennec calls it the *friction of ascent and descent*—"frottement ascendant et descendant." It occurs in interlobular emphysema. In this affection bubbles of air become effused under the pleura, and raise it at some points, so as to render the surface unequal. During inspiration and expiration, particularly during the former, and generally near its close, these elevated parts of the lung rub against the costal pleura, and cause the sound here indicated.]

OF THE EXPECTORATION.

140. *In the Healthy State*, the expectoration consists of a viscid, ropy fluid, which is transparent, colourless, inodorous, insipid, and exists only in sufficient quantity to moisten the inner surface of the air passages.

141. *In Disease*, the sputa sometimes consist of a transparent, limpid, and slightly viscid fluid, the consistence of which gradually increases, until it ultimately becomes changed into an opaque, yellow, or greenish mucous matter, such as usually occurs in pulmonary catarrh.

142. In other cases, the expectoration is composed of a transparent mucous fluid, so tenacious as to adhere closely to the bottom of the vessel in which it is deposited, even when it is inverted. This may be marked

by bloody striæ, or the blood may be combined with it in greater or less quantity, so that its colour varies from a yellow slightly tinged with red, to that of the deepest mahogany. These are the characters of the expectoration in acute pneumonia.

143. We sometimes observe the product of expectoration to consist of a frothy, colourless fluid, containing, suspended, several portions of a flocculent matter, or presenting on its surface some yellow, rounded, purulent masses, in greater or less quantity: in other cases it is composed of a mucous matter, marked by striæ of a dull white colour. These varieties occur during the early stages of pulmonary tubercles. As the disease advances, the quantity of the yellow diffluent fluid increases, and ultimately forms almost the whole of the matter expectorated. It sometimes contains bubbles of air, and presents more or less the character of pus. Such is the expectoration in the last stage of phthisis.

144. In some cases the sputa are ejected forcibly, and in large quantity at a time, so that the patients seem to vomit them. This also occurs when an effusion into the cavity of the thorax finds an exit through the bronchi.

145. Again, we sometimes observe portions of false membrane expectorated, either in the form of lamellæ, or moulded into that of the bronchial tubes, trachea, or larynx. This is characteristic of croup.

146. Lastly, the expectoration may consist of pure blood, sometimes of a bright, at others of a dark red colour, as occurs in hæmoptysis. When a large quantity is brought up at a time, we should take care to examine whether the blood is frothy, and accompanied by cough, as these are the symptoms which distinguish hæmoptysis from hæmatemesis.

147. In all cases the observer should ascertain whether the sputa exhale any particular odour, particularly when the general symptoms induce him to suspect the existence of gangrene of the lung, or of a tubercular

cavity, or a collection of pus, which may have opened a passage for itself from the pleura into the bronchi.

148. In cases of gangrene of the lungs, the sputa are as dark as the lees of wine, or greenish; and the odour is so strong as to prevent any mistake as to their real character.

OF PERCUSSION.

[The term Percussion means striking or tapping on the chest to elicit sounds. The chest being a cavity filled for the most part by the lungs, which are hollowed into tubes and cells to contain air, which pervades every part of them, will necessarily emit sounds when struck; particularly as its walls are made up of the ribs and their cartilages, which are sufficiently elastic to yield and vibrate when struck. When by a little practice we become familiar with the sounds emitted by the chest in the natural condition of the contained organs, we can readily distinguish the dull sound which occurs when the lungs, or any part of them, are gorged, infiltrated, or inflamed, from the clear resonance of the healthy state, or that unnatural exaltation of it which is induced in pneumo-thorax. Here, then, the elasticity of the thoracic parietes, the condition of the enclosed organs, and the nature of their contents, whether fluid or aeriform, must respectively be taken into account, as a change in the condition of either will necessarily modify the sonoreity (if such a word be admissible) of the cavity.

[Striking or tapping with the points of the fingers, even when done lightly, often leaves a disagreeable sensation, which remains for some time, particularly in thin irritable persons. I have often heard complaints of this in the wards of hospitals, but still more of the irritation produced by the pressure of the end of the stethoscope, when perhaps ten or twenty persons successively seek to hear some particular sound, the character of which they are desirous to ascertain. To avoid this, and perhaps also to attain more precision in our results, percussion may be made not directly upon

the skin of the patient by the fingers of the operator: he may place one of the fingers of his left hand upon the chest, and strike or tap with those of the right hand upon it; or he may place the ivory ear-piece of his stethoscope with its flat surface upon the chest, and then make percussion with one or two fingers upon the middle of it. This serves as a sufficient substitute for M. Piorry's "plessimetre," which is a small round plate of ivory that may be placed on the chest from point to point wherever examination is to be made; and when thus adjusted we may strike with the finger, or with a small wooden hammer covered with leather, so as to imitate the form of the end of the finger. Dr. Osborne, of Dublin, uses two small discs of thick hard leather: he lays one flat upon the surface, and taps with the rim of the other. These devices deserve the praise of ingenuity, but as they complicate our apparatus we seldom resort to them.]

149. The value of percussion as a mode of examination has not been by any means diminished by the discovery of auscultation. It is still considered a very efficient means of distinguishing diseases of the chest. Though it appears to be a very simple operation, it requires some precautions in performing it, so as to obtain satisfactory results. The fingers should be semi-flexed, their extremities placed closely together, and so adjusted as to be on the same plane, none of them passing beyond the others. In this way they are made to strike the chest perpendicularly, the integuments being made tense by the fingers of the other hand. The percussion should be made alternately on the corresponding points of each side of the chest, with the same degree of force and same angle of incidence. The wrist should be free and unrestrained, so as not to strike too forcibly and cause pain. Percussion may occasionally be made by striking the walls of the thorax with the hand flat and extended; but in this case allowance must be made for the sound emitted by skin.

150. The position of the patient should also be pro-

perly adjusted. He should be made to sit upright, his arms being carried backwards when the anterior part of the chest is to be examined; elevated towards his head when percussion is being made on the lateral parts: or crossed in front, whilst we strike the back,—he should at the same time be directed to bend forwards, so as to give the back an arched position. These several measures are intended for the purpose of rendering tense the muscles which cover the walls of the thorax.

151. The condition of the external parts should be attended to: thus the sound will be more clear when the patient is thin and his fibres dry, than when he happens to be very fat, or when the flesh is soft and flaccid; but if the integuments be infiltrated by a serous effusion, no sound will be emitted on percussion.

152. The sound is more clear when we make percussion on those parts that are covered merely by the skin, or by thin and tense muscles; for instance, on the clavicles, or immediately below them to the distance of two fingers' breadth;—on the sternum, near the cartilages of the ribs;—within the margins of the axilla, as far as the third rib, and posteriorly on the angles of those bones;—on the spine of the scapula, and, in very thin subjects, on its supra and infra spinous fossæ.

153. The sound must obviously be dull at the region of the heart, opposite the mammæ in females, and great pectoral muscle in males; and also inferiorly at the right side, in consequence of the position of the liver; at the left side, on the contrary, the sound is rendered more clear by its vicinity to the stomach, particularly if that viscus be distended by flatus.

154. *In Disease*, the sound emitted by the chest frequently becomes altered, being rendered dull, obscure, or even totally suppressed; or, on the contrary, it may become more clear than in the natural state; so much so as in some instances to give rise to a gurgling, or even a metallic tinkling. When this phenomenon occurs, it is observed most usually beneath the clavicles. This exaltation of sound occurs when the lungs contain a

greater quantity of air than is natural, or when this fluid is effused into the cavity of the pleura.

155. When the elasticity of the lung is diminished by its becoming infiltrated, without at the same time losing altogether its permeability to the air, the sound is rendered dull or obscure, according to the degree in which the pulmonary tissue is affected. This change takes place in cases of intense catarrh, in the first degree of pneumonia, and in œdema of the lungs.

156. The sound is suppressed altogether in the second degree of pneumonia, when the substance of the lung becomes dense and heavy like that of the liver, and so is rendered impermeable to the air. The same effect is produced when the lung is compressed by a fluid effused into the cavity of the pleura, or by the development of any accidental production in its substance. This suppression is, however, but partial in most cases. Its extent depends on that of the effusion, hepatization, or tumour, with which it is connected, the remainder of the side still emitting its natural sound on percussion.

157. When the lung contains an unusual quantity of air, or when an elastic fluid is effused into the pleura, the sound becomes more clear than natural. And lastly, its tone may be increased so as to resemble a metallic tinkling, in cases of pulmonary excavations, or pleuritic abscess, which are circumscribed and filled partly with air, partly with fluid.

OF THE PHENOMENA REFERABLE TO THE HEART.

158. Laennec has referred these to four heads:—1st, the extent in which the movements of the heart are perceptible: 2d, the impulse which they communicate; 3d, the sound which accompanies them; 4th, their rhythm.

159. In a healthy man, whose heart is properly proportioned, we can distinguish its pulsations only in the præcordial region; that is, in the space between the cartilages of the fifth and seventh ribs, and at the inferior part of the sternum. The movement of the left cavities

s most perceptible in the former situation ; that of the ight, in the latter : but if the sternum be very short, hey are sensible even in the epigastrium.

160. In some corpulent persons we cannot by the and distinguish the pulsations of the heart, and the pace in which we can perceive them by the cylinder is very limited, being not more than a square inch ; but in maciated persons, particularly when their chests are narrow, they are heard in a much wider range, namely, n the inferior fourth, or probably three-fourths of the sternum, or, occasionally, even along the whole length of that bone, under the left clavicle, and sometimes even as far as the right.

161. When the stroke of the heart is confined within these bounds, and when it is less strong under the clavicles than in the præcordial region, in persons of that conformation which has been just described, we may still consider the organ as retaining its proper proportions.

162. The stroke of the heart will, of course, be heard in situations different from those here stated, in cases in which a transposition of the viscera has existed from infancy.

163. *The Impulse.*—When one extremity of a stethoscope is placed on the cartilages of the ribs, or lower part of the sternum, and the ear is applied to the other, a sensation is communicated as if it were elevated by each stroke of the heart : this is termed its impulse.

164. It is very slight in a healthy person, particularly if somewhat corpulent ; but even when altogether imperceptible by the hand, it is rendered distinct by the cylinder. In general, it is distinguishable only in the præcordial region, or, at farthest, along the inferior half of the sternum.

165. It is most forcible opposite the cartilages of the ribs, being the part which corresponds to the point of the heart. Its degree of strength is extremely variable ; we learn, however, by practice, to distinguish when it is more intense than it ought to be.

166. *Of the Sound.*—In their alternate contractions, the auricles and ventricles emit sounds peculiar to each, which are rendered quite manifest by the cylinder, or by placing the ear over the region of the heart, no matter how small the volume and force of the organ may be.

167. In the healthy state there are two distinct sounds; one, dull and lengthened, coincides with the arterial pulse, and the sensation of impulse above described, and therefore indicates the contraction of the ventricles; the other, clear and sudden, somewhat like that of the valve of a bellows, corresponds with the systole of the auricles.

168. The sound of the right cavities is heard most distinctly opposite the lower part of the sternum, that of the left at the cartilages of the ribs.

169. When the walls of the heart happen to be more thin than usual, which may occur in persons who are enjoying uninterrupted health, the pulsations are heard in a greater extent of space than in persons differently constituted, but the sound is always louder in the region of the heart than in any other part. In such persons we also observe, that the contraction of the auricles is more audible under the clavicles than that of the ventricles, which is not the case either at the lower part of the sternum or at the cartilages of the ribs.

170. In some cases the anterior border of the lung is prolonged in front of the pericardium, which renders the sound of the auricles more dull than that of the ventricles, but still not so much so as to make it indistinct. This evidently arises from its being masked by the murmur of respiration, or by that of the air forced out from this process of the lung, by the compression exerted upon it by the heart.

171. *Rhythm.*—The movements of the heart are performed in a determinate order, which constitutes their rhythm. Each contraction of the ventricles coincides with the dilatation of the arteries, and is accompanied by a dull, prolonged sound; this is instantly followed

by a clear and rather quick sound, which is owing to the contraction of the auricles: a moment of repose succeeds, when the ventricle again acts; and so the succession goes on.

172. [*Analysis of the Heart's Action.*—By means of the stethoscope we can analyse the heart's action, and assign the time occupied by the contraction of each of its cavities. When the instrument is applied to the præcordial region, we hear first a dull, lengthened sound, synchronous with the arterial pulse, and therefore produced by the contraction of the ventricles; this is instantly succeeded (without any interval) by a sharp, quick sound, like that of a valve, or the lapping of a dog: this corresponds to the interval between two pulsations, and therefore marks the contraction of the auricles; then comes an interval of repose. The relative duration of these three periods may be thus stated: one half, or somewhat less, may be assigned to the contraction of the ventricles; a quarter, or a little more, to that of the auricles; the remainder for the repose. According to this statement, if we take any given period, say twenty-four hours, we at once perceive that the ventricles are in action twelve hours, and therefore rest twelve hours; the auricles are in action six hours, and rest eighteen hours.—This calculation is applicable to a healthy adult, whose pulse beats seventy strokes in a minute. It assumes, what some will be disposed to deny, that the heart is passive in its dilatation—a point on which opinions are much divided.]

[Such was the doctrine taught by Laennec relative to the movements of the cavities of the heart—their succession and duration,—in other words, their rhythm. It was received by most persons without any question of its correctness, though the order of the movements as here stated is the reverse of what one would naturally infer it to be—the action of the ventricles being put before that of the auricles. Dr. Corrigan showed, from some observations which he made on the movements of the heart, what the order of events really is, viz. that

the auricles contract first, the ventricles second, and that the pause then succeeds:—he, however, proceeded farther, and stated that the contraction of the ventricles is quick, and that of the auricles is slow, and that the impulse of the heart against the side is synchronous, not with the contraction of the ventricles, but with that of the auricles, and that it is produced by the jet of blood from the auricles into the ventricles, which causes the tip of the heart to swell, and strike against the ribs. —(Transactions of the King and Queen's College of Physicians in Ireland, 1830; Medical Gazette, vol. 6, page 207.)—As to the sounds of the heart, Dr. Corrigan conceived that the first sound is caused by the rush of blood from the auricles into the dilating ventricles, and not by the contraction of the ventricles, as was previously supposed; and that the second sound is caused by the striking together of the internal surface of the ventricles, and not by the contraction of their muscular fibres, as Laennec supposed, or by the flapping of the valves, as Dr. Carswell had suggested.

[It perfectly accords with general observation, that the auricles contract first and quickly, the ventricles second and rather slowly; but it does not appear to be at all correct to say that the impulse of the heart against the side is synchronous with the action of the auricles, or that it is produced by the jet of blood which they send into the ventricles. The experiments of Dr. Hope to determine these points, appear to demonstrate—

1. That the auricles contract immediately before the ventricles.
2. That the contraction of the auricles is inconsiderable, not exceeding a third of their volume; consequently, the quantity of blood projected by them into the ventricles is much less than their capacity would indicate.
3. That the impulse against the side is caused by the contraction of the ventricles, that of the auricles being much too slight to produce it; and that it is

simultaneous with the contraction of the ventricle, and with the pulse.

4. That it is the apex of the heart which strikes the ribs.
5. That the contraction of the ventricles commences suddenly, but still is prolonged through the interval which occurs between the first and second sounds.
6. That the ventricles do not ever appear to empty themselves completely.
7. That the contraction of the ventricles is followed, by a dilatation, which is a quick movement accompanied by an influx of blood from the auricles; by this the ventricles expand, but at the same time their apex collapses and retires into the chest.

[When observers differ thus as to the order in which certain events or phenomena occur, we cannot be surprised to find that they differ in the explanations which they give of them. When we ask what is the cause of those sounds which are heard in the region of the heart, we find that Laennec attributed them to muscular contraction, for that when the muscles of the arm are put into strong and decided action, a sound is heard through a stethoscope placed upon one of the condyles of the humerus, and that this sound is like the "bellows sound" (bruit de soufflet), occasionally heard in the heart and arteries.—(Traite de l'Auscultation Mediate, tome 2, page 440.) Dr. Corrigan attributed the dull lengthened sound to the entrance of blood into the ventricles, as it is forced into them by the contraction of the auricles, whilst the sharp quick sound appeared to him to be caused by the slapping of the sides of the ventricles against one another.

[Dr. Hope feels assured that the contraction of the auricles does not produce any sound whatever;—and as to the dull lengthened sound which is synchronous with the systole of the ventricles, the impulse of the heart against the side, and the pulse at the wrist—this Dr. Hope conceives to be owing to the impulse which is given to the particles of blood contained within the ven-

tricles, which impulse, by being propagated by collision from particle to particle, generates the sound; moreover, that the production of the sound is in a manner favoured by the irregularity of the inner surface of the ventricles along which the fluid is made to pass. Now if the contraction be gradual, the sound will be subduced and prolonged; but if the movement to which any particular sound is owing, be sudden, the sound is likely to be short, loud, and clear: on this principle, the second sound, which appears to coincide with the diastole of the ventricles, is attributed to the sudden entrance of the blood into the ventricles at the moment of their expansion.

[Magendie gives a different rationale of the sounds. He conceives that they are produced, not by the movement of the blood within the cavities, or by the action of these cavities upon their contents, but that they are caused by the stroke of the heart's surface against the ribs; for, according to his observations, the sound becomes indistinct when the heart is prevented from coming into apposition with the thorax, and ceases to be heard when the heart is denuded by the removal of the parietes of the thorax. If these positions be tenable, are we, on recurring to the experiments of Dr. Hope, to admit that, notwithstanding the care with which they were performed, there was still a source of fallacy, which was overlooked, viz. that the sounds were produced by the stroke of the ventricles against the end of the stethoscope when applied to the surface of the heart? The observations here referred to were made on an ass. The animal was stunned by a blow, and then thrown on its back. The chest was quickly laid open, and the heart denuded. A stethoscope was laid on its surface, and whilst one person attended to the sounds, others noted the movements. That the sounds are produced within the cavities of the ventricles, or in their muscular parietes, and not by what takes place external to them, is the more probable inference, even *à priori*, from what we know of certain

abnormal sounds with which all auscultators are sufficiently acquainted. The "bellows sound," for instance, is often heard in the course of the arteries; and as in this case it cannot be produced by any influence which the coats of the vessels could exert upon the surrounding structures, we conclude that it is owing to the reciprocal influence of the vessels and their contained fluid upon one another: hence, when a similar sound is heard in the region of the heart, we attribute it to the like cause; and we reason in the same way with regard to the rough sounds, "bruit de rape," "bruit de scie," which are well known to be owing to contraction and induration of the valves.

[Dr. Williams has lately performed some experiments in order to ascertain the exact seat and cause of the heart's sounds. A young ass was killed by the woorara poison; artificial respiration was then kept up; and the heart was brought into view by the removal of part of three of the ribs. It was then found that, before the pericardium was opened, the first and second sounds were distinctly heard, though the heart did not touch any part of the parietes of the chest, and that they were audible even when a piece of the lung was interposed between the heart and the stethoscope. This, it will be observed, is in direct opposition to M. Magendie's statement. The first sound—that which is dull and prolonged—was equally audible at every part of the ventricles; whilst the second, or the short flapping sound, was most distinct at the roots of the great arteries, where they issue from the ventricles.

[The left auricle was opened, and the mitral valve was destroyed; yet the first sound was heard in the ventricle, and continued to be recognized, but not so distinctly, even when by pressure the blood was prevented from entering the ventricular cavities. This being the case, the sound must necessarily be produced by the muscular contraction itself, and not by any impulse which it gives to the fluids; or, to use Dr. Williams's words, "it is essentially produced by the

tightening of the muscular parietes of the ventricles." —Treatise on Diseases of the Chest, p. 176.

[Now as to the second sound. It was found in these experiments that, when the pulmonary and aortic valves were held back by instruments (a dissecting hook, and a shoemaker's awl) passed into the aorta and pulmonary aorta, so as to prevent them from acting, this sound was evidently weakened, and a hissing murmur accompanied it. If this be so, then the short flapping is produced by "the tightening of the semilunar valves, caused by the reaction of the arteries on the column of blood injected into them; and they will be synchronous with the diastole of the ventricles."—*Op. cit.*]

[*The Pulse.*—The flow of blood through the arteries determines, as is well known, the phenomenon called the *pulse*. The number of pulsations made by an artery, in a given time, varies according to the age, sex, and constitution of different individuals; and not only their number, but also their force and character, vary in different forms of disease; hence the pulse has at all times been considered an important indication of the treatment to be pursued; doubtless on the principle that it is a criterion of the state of the vascular system, and the vascular system, again, of that of the body at large, as well as of its component parts, from the intimacy of its connexion with them. This, though true in its general acceptation, admits of some important exceptions, which we must be prepared to expect, when it is considered that the heart and arteries, though intimately associated, are yet, to a certain extent, independent of one another (see Elements of Anatomy, art. *Vascular System*). Thus we find that the capillaries may be stimulated to action, the heart and large vessels retaining their natural rhythm; and, on the contrary, the force of the heart's action may be increased, that of the arteries, as estimated by the pulse, being unaffected by it. Every pathologist is aware of the different effects produced by bleeding, according as it is general or local, arterial or venous,

depletive or derivative. A profuse hæmorrhage will, at times, produce but a trifling degree of exhaustion, though, in the same person, a slight venæsection may cause syncope. In cases of hæmorrhages from the uterus, lungs, or nose, we can often estimate to what an extent the capillaries are independent of the general circulation, from the little influence which even copious blood-letting exerts upon them. It may be said that this reasoning applies to the capillaries, and has little or no reference to that order of vessels in which the pulsation is felt; for that these being intermediate between the extreme parts of the circulating system, or rather between the central organ and the final termination of the vessels, are affected by the pathological conditions of both, and therefore serve as their appropriate measure: But when we appeal to records of cases and to authorities, we find that this position is liable to several exceptions: 1. In many cases of pneumonia and pleuritis the pulse has been observed to remain quite natural, as to its frequency and force, even in the acute form of these inflammatory affections. Again, to use the words of Senac, "Si dans les fievres malignes lo médecin ne voulait consulter que le seul etat du pouls, tout lui paraitrait en sûreté, tant le pouls, dans ces maladies, semble souvent conforme à l'état naturel." This seems nearly a transcript of a passage in Prosper Alpinus: "Sæpius fit ut in ægrotis, malignis morbis laborantibus, pulsus ita sanorum similes observantur ut non raro vel etiam doctissimi medici decipiantur." 2. Hypertrophy of the heart may exist to a considerable degree, and its contractions may be strong and forcible, as indicated by its pulsations against the side of the chest, yet the pulse may be weak, small, and thready. It should be recollected, moreover, that each part or cavity of the heart may separately suffer that alteration of its nutrition which is termed hypertrophy, the others retaining their natural condition. If, in such a case, the hypertrophy be confined to the right side of the heart, the pulse, being produced by the action of the left ven-

tricle, may continue regular in every respect, though a decided change has taken place in the structure and action of the central organ of the circulation, even though hæmoptysis may be produced from time to time by the over-action of the right ventricle. Considered, then, as an indication of practice, we find the pulse, in many important cases, by no means satisfactory, or to be trusted by itself. In acute pneumonia and pleuritis, we often find it so small and weak as to contra-indicate bleeding, though that remedial means be most urgently required; and on the contrary, in some apoplectic cases, it may be full and bounding, so as apparently to warrant venæsection, where, if that measure were carried to any extent, it might be followed by total collapse and death. These remarks are not brought forward with a view to decry the practice of feeling the pulse, or to deny its utility. It can scarcely be denied that an indication, or an inference, to be adequately founded, must be deduced from an examination, not merely of a part of the circulating system, but of each of its parts; and that it, therefore, should include a consideration of the central organ, as well as of the vessels which issue from it. If this be once assented to, it will be difficult to elude the force of the other arguments that may be adduced to prove the value of auscultation, as a means of diagnosis, as well as an indication of treatment.

[I have above alluded to the many indications deduced from the pulse in the treatment of disease; its characters, when stated fully, include a consideration of its rate as to quickness or slowness, as well as its force, size, and regularity. Thus it is quick or slow, and authors make a distinction with regard to a quick pulse, for they speak of "pulsus frequens and pulsus celer." The pulsus frequens implies that there are many beats in a given time—it applies to the number merely; but the pulsus celer indicates something as to the quality of the stroke, as if it were short and hurried. The natural opposite of "frequens" is "rarus,"—the one implying

many strokes in a given time, the other few; but "celer" is opposed to "tardus;" in the former each beat is quick, in the latter slow, and, as it were, lengthened. Now as to the force of the pulse,—it is strong or weak [pulsus validus, pulsus debilis]—it is hard or soft [pulsus durus, pulsus mollis]—and it is large or it is small [pulsus magnus, pulsus parvus]. However, it should be recollected, that the pulse may be small, though not weak; and may be large, but not strong: if it be small, and at the same time soft, then it is necessarily a weak pulse, particularly if at the same time the vessel be very readily compressible. This is the state which so often occurs in very feeble, debilitated persons; it resembles a creeping, thrilling motion, and is termed fluttering. When the pulse is hard, and at the same time large, it is considered a strong pulse, more particularly if the vessel be not compressible.

[We often find the artery, when compressed, to give the sensation as if a tense, hard cord, were under the finger: this is the sharp or wiry pulse, which so often occurs in acute inflammations: it stands opposed to the small, weak, creeping movement, which is usually called a thready pulse. It should always be recollected, that there are many cases in which the character of the pulse differs in the two wrists,—that the artery beats feebly at the left side, and strongly at the right, which indicates the necessity of feeling the pulse at both wrists. Also a few cases have been cited of persons in whom the pulse was intermittent during health, but became regular during any occasional ailments to which they were liable. These facts point to the necessity of making inquiry concerning individual peculiarities or idiosyncracies.—See *Elliotson's Lecture*, Med. Gaz. vol. ix. p. 141.]

OF THE PHENOMENA FURNISHED BY THE HEART.

173. *In Disease.*—When treating of the derangements of the heart, we shall follow the arrangement adopted when considering its actions in health.

174. *Extent.*—The pulsations of this organ are sometimes heard beyond the limits above assigned to them, or they may be restricted and confined to a very limited portion of the walls of the thorax.

175. The increase of extent is perceptible, first along the left side, from the axilla to the region of the stomach; then for the same space at the right side, next at the posterior part of the left; and finally, but very rarely, in the same region of the right side; the intensity of the sound becoming progressively less in the order here indicated.

176. The possibility of thus perceiving the pulsations of the heart in these different points always indicates a diminution of the thickness of its walls, particularly those of the ventricles. It also marks a weakness or dilatation of the organ, which in the latter case strikes the sternum and ribs with a large surface. However, it should not be forgotten that similar effects are occasionally produced by causes altogether independent of any affection of the heart; for instance, narrowness of the chest, emaciation, hepatization of the lung, or its compression by a liquid or gaseous effusion, the presence of an excavation with firm walls, nervous agitation, fever, or, in a word, by any thing that can increase the frequency of the pulse.

177. Sometimes the pulsations of the heart are distinguishable only in a very circumscribed extent of space. This is a more rare occurrence than the preceding, and is produced by an increased thickness of its walls.

178. It sometimes happens that we perceive the pulsations more distinctly at the right side than at the left, or more high or low than usual. These variations are determined by the existence of a fluid or tumour at one side of the thorax, in the mediastinum, or in the cavity of the abdomen; and finally, the seat of the pulsation may vary, being perceptible, now in one place, now in another.

179. *The Impulse.*—As the intensity of the impulsion

communicated by the heart varies very much during health, it becomes difficult to decide positively upon its absolute increase or diminution in disease, unless it be very strongly marked, or be more manifest at one side than the other, which is the deviation most usually found to exist. This increase is sometimes very slight, but in some cases becomes so great as to elevate the walls of the thorax so strongly as to render this movement perceptible at a considerable distance. This is the pathognomonic sign of hypertrophy of the heart.

180. The force of the impulse is directly proportioned to the thickness of the walls of the ventricles, and, therefore, to the narrowness of the limit within which their contractions are audible. When the ear is applied to a stethoscope laid on the cartilages of the ribs, a jerking motion is communicated to it, which is strongly felt by the observer, and manifest to all around him.

181. Whatever increases the activity of the circulation, such as walking, running, fever, &c., may momentarily determine this state; and causes of an opposite tendency, rest, bleeding, &c., produce the contrary effect: hence, when we want to examine a patient, we should wait until a perfect calm is established.

182. The diminution of the heart's impulse is never so strongly marked as its increase. It depends sometimes on the weakness of the organ and the thinness of its walls, and therefore occurs in cases in which its contractions are perceptible in a wide extent of space; at others, it is produced by extreme embarrassment of the respiration, and difficulty of the pulmonary circulation, and then may co-exist with a well-marked hypertrophy; we also observe this diminution to occur towards the close of this latter disease. Certain emotions, such as fear and depressing passions, may also produce it.

183. *Of the Sound.*—The sound of the heart's contractions may become more dull, or more clear and loud than natural; or sounds altogether new may be produced, which bear no similitude to any that are emitted

in the healthy state of the organ. A diminution of the intensity of the sound is caused by an increased thickness of the walls of the heart; but if it occurs together with a weakness of the impulsion, it indicates a "ramollissement," or softening of its structure.

184. The alteration most usually observed is an increased loudness and clearness of the sound, which always denotes a thinness of the walls of the heart. This may be emitted by the auricles or by the ventricles. The place in which it is audible marks its seat, and the time determines whether it arises from the contraction of the auricles, or that of the ventricles.

185. As to the sounds which possess no similitude with any that occur during health, a knowledge of which is necessary as a means of distinguishing several of the derangements of the heart, they may be referred to the three following heads: —

186. "*Bruit de Soufflet*," or a sound like that of a bellows. Its name accurately expresses the character of this phenomena. It may accompany the contraction of the ventricles, auricles, or large arteries; it may be continued or intermittent, the slightest cause being sufficient to induce its return after it has ceased. It is observable sometimes in hysterical and nervous persons, and also in those disposed to hæmorrhages, even though there is no alteration of the functions or structure of the heart; however, in other instances it coexists with morbid affections of that organ.

187. "*Bruit de Râpe*," or sound of a file. This, like the former, may occur during the contraction of either of the cavities of the heart, but is not intermittent; when once developed, it invariably continues, with, however, some occasional changes in its degree of force. The contraction of the auricles or the ventricles is more prolonged than natural, and emits a sound, hard, rough, and, as it were, stifled.

188. This phenomenon indicates a contraction of the orifices by cartilaginous deposits, or ossification of the valves. The place and time in which it is heard indi-

ite its situation. If it coincides with the systole of ie ventricles, the contraction exists in the sigmoid alves; if, on the contrary, it occurs during the con- action of the auricles, it occupies the auriculo-ventri- ılar opening.

189. "*Craquement de Cuir*," or sound like the crack- ng of new leather, was observed by M. Collin, in a ase of pericarditis, of which he looks on it as symp- omatic.

190. *Rhythm.*—The contraction of the ventricles may e lengthened beyond their ordinary duration, so may iat of the period of repose also: this indicates hyper- ophy of these cavities; which is the more considerable, s the time of the contraction is the more prolonged.

191. In other cases, on the contrary, the contractions re found to be more rapid, and the repose more short han natural: this variation may coincide with quick- ess, or even with slowness of the pulse, and is not con- idered as indicative of any morbid alteration.

192. The time of the systole of the auricles is rarely bserved to be lengthened or shortened. Their con- raction seems, sometimes, to anticipate that of the entricles, particularly during palpitation; the conse- uence of which is, that the sound of the auricles is nasked by that of the ventricles, and in cases of trongly-marked hypertrophy, becomes altogether im- erceptible.

193. Sometimes, during one systole of the ventricles, he auricles may make two or three contractions, or on he contrary, while the auricles are making one, the entricles may make two, within the time of an ordi- ary contraction. These phenomena do not mark any articular lesion; the pulse even does not participate in hese anomalies.

194. We sometimes observe several equal contrac- ions followed by one or more which are shorter and uicker than the rest, or by a perceptible pause consti- uting an intermittence;—this should be considered as ndicative of disease.

195. Sometimes, again, the contractions are so frequent and irregular, that it is impossible to analyze them: this is always connected with some organic affection.

196. After having examined the heart, attention should be directed towards the region of the sternum and the first ribs on the right side, to ascertain whether there are any pulsations determined by an aneurism of the arch of the aorta.

197. Having thus concluded our remarks on the method of examination applicable to the heart as the central organ of the circulation, we shall, in the next place, proceed to consider the varieties which the pulse presents, though these are not confined to affections of the chest more particularly than to those of the other cavities.

198. *The Method of examining the Pulse.*—The observer should wait until any emotion which his presence may have caused, has subsided. He may then proceed to examine the pulse at the wrist, temple, lateral parts of the neck, or, in a word, in any other part where an artery of a certain size happens to be superficially seated. After having ascertained that the course of the blood is not interrupted in the arm, by tight clothes, or by a ligature, he takes the wrist of the patient, who ought to be either sitting, or lying in such a way as that the weight of his body may not incline more to one side than the other. The arm being placed in extension, and the fore-arm in pronation, supported by its ulnar border, while the radial is somewhat elevated, the artery is felt with the hand opposite to that of the patient.

199. The fingers should be laid in a right line on the course of the artery, the index finger on the anterior, and the thumb on the posterior or dorsal side of the wrist, furnishing a support to the others. The little finger, which receives the first impulse of the blood, should be applied to the vessel but slightly, but the others may compress it more or less. We should continue this process for a minute or two, and always ob-

rve the precaution of examining the pulse in both
rms. The abdominal aorta and eruril arteries may
examined by means of the stethoscope, which ena-
es us readily to distinguish the circulation in those
essels. A watch, with a second-hand, is in general
eeessary, in order to ascertain exactly the number of
ulsations that are made in a given time.

200. *In Health* the pulse is equal and regular, of a
oderate degree of strength and frequency. The num-
er of its beats varies, according to the age, sex, tempera-
ent, stature, and idiosyneracy of each individual. In
ie first months of life there are one hundred and forty
terial pulsations in a minute; up to the eompletion
f the second year, there are about one hundred; at
uberty the number is reduced to eighty; in middle
fe we count from sixty to seventy-five; and, finally, in
ld age from fifty to sixty. The pulse is generally
iore frequent in females, and persons of a nervous
emperament; it beeomes quickened after meals and
xercise, during pregnaney, or after any sudden emo-
on; but it is rendered slow by repose, fasting, and
lood-letting.

201. The observer should also recollect that the
ulse is subjeet to variations, both as to the duration
nd order of its beats: it is neeessary to bear this in
iind, lest he attribute to disease what may be altoge-
ner independent of it.

202. *In Disease* the pulse may be quick or slow,
trong or weak, full or small, hard, contracted, resist-
ng, or soft and compressible, requiring a greater or less
ressure on the artery to measure its degiee. It may
lso be frequent, or the reverse, regular or irregular, in
vhich latter case there are sometimes intermittences
oinciding with the contraction of the auricles; and,
urther, it may be equal or unequal, distinct or con-
used, thready or insensible.

203. In general, the larger the artery is, the stronger
s the pulse; this should be taken into aeeount when
t happens to be stronger in one arm than in the other.

The strength of the pulse diminishes gradually, when a tumour is developed near the course of the artery; as we observe in cases of aneurism of the arch of the aorta, when the subclavian artery suffers compression against the walls of the thorax

204. The veins sometimes present pulsations synchronous with those of the arteries. This may be observed in the jugular veins, when, in consequence of an aneurism of the right cavities of the heart, a reflux of blood is determined into them, which may occasionally be perceived, even as far as the superior part of the neck. When a communication is established between an artery and vein which are contiguous, it determines a similar result.

205. There still remain to be described two other means or procedures, which are occasionally used in examining diseases of the chest.

OF THE MEASUREMENT OF THE THORAX.

206. This process may be performed as follows: The patient being placed in a sitting posture, or standing upright, with his arms hanging freely by his sides, or raised towards his head, a cord is drawn round his chest at any part of it; if this be doubled upon itself, we ascertain the natural extent of each side. The cord should then be applied successively to each side, beginning at one of the spinous processes of the vertebræ, and extending to the middle of the sternum, care being taken that it passes in a right line from one of these points to the other: by comparing the result of this latter measurement with that given above, we ascertain the degree of dilatation or contraction that may exist at either side of the cavity.

207. In making this calculation, we should however recollect, that, even in the healthy state, the two sides rarely present the same capacity, and that in persons who have been attacked by very severe pleurisies, the side that remained unaffected acquires an increase of development, while that which had been the seat of the

isease becomes narrowed and flattened; the point of ıe shoulder is depressed, the side hollowed, and the ıuscles thin and wasted. Sometimes, also, in cases of bthisis, we observe the upper ribs somewhat depressed, rhich is caused by adhesions between the pleura cos-hlis and pulmonalis.

208. The thorax is dilated in cases of fluid or gaseous ffusions into the cavity of the pleura or pericardium, r of any considerable development of accidental tu-nours. It is contracted by original malformation, or ıfter the termination of pleurisies, as has been already tuted.

OF SUCCUSSION.

209. This process consists in giving to the body one or more slight jerks, for the purpose of ascertaining the existence of a fluid supposed to be in the thorax. This notion determines a sound similar to that produced by shaking a bottle which is half full.

210. The sound is not emitted unless the effusion consists at the same time of air, or gas and liquid. For, f the effusion be liquid only, then the lung will fill exactly all the rest of the cavity, and cannot be compressed by the fluid sufficiently for the succession to excite any sound; and again, if the gaseous effusion be too abundant, or not sufficiently so, no result will be obtained. Hence these fluids must be combined in certain fixed proportions.

211. These are the principal indications which mark the different affections of the chest. The observer should also note the expression of the countenance, the colour of the cheeks and lips, their state of emaciation or injection, the manner in which the patient lies, the distribution of temperature in the limbs, the existence of partial sweats, and the state of the blood after bleeding, particularly in acute disease.

212. In phthisical cases we should always inquire whether there be any hereditary predisposition. We shall recur to each of these points more in detail, when treating of the diseases peculiar to each organ.

213. We may here briefly sum up the different points to which the observer should direct his attention. He should begin with examining the expectoration, as being of considerable value in distinguishing diseases of the chest. If limpid and viscid, it indicates acute catarrh; if, after presenting this appearance, it becomes opaque, yellow, greenish, or puriform, it marks chronic catarrh; if it adheres firmly to the vessel in which it is received, and is more or less tinged with blood, it announces pneumonia; if round and opaque masses float in a quantity of frothy fluid, or if they are puriform, and streaked with white lines, and containing small white masses insoluble in water, we conclude that they are produced in a tubercular excavation. If the expectoration is fluid, purulent, and suddenly coughed up in great quantity, it should make us presume that a fluid contained in the pleura has made its way through the bronchi, and so is evacuated. When pieces of false membrane are expectorated, they are recognized at once as the product of croup; and a dark green fluid, exhaling a fetid smell, marks gangrene of the lungs. In hæmoptysis, bright red and frothy blood is expectorated; this should not be confounded with that which occurs in hæmatemesis, or with the bleeding which occasionally comes from the gums or the nares.

214. The effects of percussion should next be attended to, as they tend to direct the observer in the examinations he is about to make with the assistance of the stethoscope. It should not be forgotten that, even in health, there are some parts of the chest which give a dull sound, as for instance, the region of the heart, and the lower part of the right side; there are others in which the sound is heightened, as the lower part of the left side. Percussion indicates the parts in which the sound has become more dull, and these in which it is more clear than natural; diminution and absence of the natural sound characterize pneumonia,—accidental tissues developed in the lung or cavity of the pleura, hypertrophy of the heart, and effusion into the pleura

pericardium; increased loudness of sound occurs in emphysema of the lung, or effusion of gaseous fluids into the pleura; finally, the gurgling and metallic tinkling indicate pulmonary excavations, or circumscribed cavities in the pleura, communicating with the bronchi.

215. Inquiry should next be directed to ascertain the state of the respiration, (whether it be painful and provokes cough, the character of the cough, and also of the voice, which may be hoarse, croupal, &c.) after which, by the stethoscope, the observer may ascertain the parts of the lung which are or are not permeable to the air. The "râle crepitant" will indicate to him the first degree of pneumonia, œdema of the lung, and hæmoptysis; acute catarrh will be distinguished by the "râle sonore," or "sibilant;" chronic catarrh, and the gurgling of softened tubercle, by the "râle muqueux;" and interlobular emphysema, by the peculiar sound described above as the *murmur frictionis*.

216. The phenomena of the voice should be explored in the different parts of the chest. If pectoriloquy is heard under the clavicle, or in the hollow of the axilla, particularly at one side, it indicates phthisis; ægophony is the proper sign of effusion into the cavity of the pleura; finally, the metallic tinkling announces a cavity communicating with the bronchi, and the metallic respiration, a simple bronchial fistula.

217. When any symptoms of effusion exist, it will be necessary to measure each side of the chest, and try by succussion to discover the presence of the fluid supposed to be present.

218. When the heart is supposed to be affected, the observer, after having ascertained that there is no unnatural enlargement in the præcordial region, and after making percussion, should proceed to examine the pulsations of the organ, between the fifth and seventh ribs, and at the base of the sternum. He should consider these in reference to their extent, impulsion, sound, and rhythm. If they are feeble, and heard in different parts

of the thorax, he may suspect a dilatation of the ventricles; if, on the contrary, they are strong and circumscribed, they indicate hypertrophy; if they emit a clear sound, it is a symptom of thinness of the walls of the heart. The disease is proved to exist at the right or left side of the organ, according as these effects are more audible at the base of the sternum, or between the cartilages of the ribs, and the time at which they are heard marks whether it is the auricles or ventricles that are affected. When the "bruit de râpe," or sound like a file, is heard at the left side, and is synchronous with the contraction of the ventricles and the pulse, it indicates a narrowing of the sigmoid-aortic, or the mitral valves: when, on the contrary, it is synchronous with the contraction of the auricles, the narrowing is at the auriculo-ventricular opening; when it is heard at the base of the sternum, it is a sign of contraction of the tricuspid or sigmoid valves of the pulmonary artery.

219. The observer should examine the anterior part of the sternum, to ascertain whether there be an aneurism of the arch of the aorta; and the posterior part of the thorax, to determine that of the descending portion of this vessel. In all these cases he should attend particularly to the state of the pulse, whether it be frequent, small, irregular, contracted, or developed; lastly, he should conclude this examination by noting the expression of the countenance, the appearance of the body, and the symptoms referable to affections of other organs.

THE METHOD OF EXAMINATION APPLICABLE TO DISEASES OF THE ABDOMEN.

220. As the cavity of the abdomen contains a great number of organs, whose functions and sympathies are altogether different one from the other, it becomes impossible to comprise under one head the various means of examination by which we are enabled to distinguish the diseases of these organs, and give a correct history of them. It is only when treating each of them sepa-

ntely, in the second part of the work, that we shall be ble to enter into all the necessary details. We therefore find it necessary to arrange under so many separate eads the methods of investigation applicable to each of iem. We shall, in the first place, say a few words on ie form, &c. of the abdomen in health, in order that ie changes produced by disease may be more readily nderstood.

221. *The Abdomen in the Healthy State.*—Its size and orm present some varieties, according to the age, sex, nd temperament of the individual. In infancy the size f the abdomen is considerable; its walls are thick, its orm round, particularly in the inferior regiou, but its ze diminishes as the person advances in age. In the dult it presents no prominence, unless such as depends n obesity, or particular conformation depending on emperament. In the male it is much more flat than it s in the female, in whom, after repeated pregnancies, : becomes prominent, particularly in the hypogastric egion. In persons who exhibit the physical signs of he sanguineous temperament, the abdomen is in general rather small; but if the lymphatic temperament be ombined with the preceding, then it is susceptible of onsiderable enlargement. On the contrary, in persons f a nervous temperament, the abdomen is small, and, s it were, constricted; finally, in those who eat much, t becomes considerably enlarged, as in them the abdominal viscera become very much developed. In iealth it is not sensible to pressure; it is soft and compressible; its temperature is moderate: percussion causes a dull sound.

222. *Mode of examining the Abdomen.*—The patient being placed on his back, the abdomen exposed, and the head inclined forwards on the chest, supported by pillows, the thighs and legs should be placed in the flexed position, so as to relax the abdominal muscles as much as possible: the examination is proceeded with as follows:—

223. The temperature may be at once determined,

by ascertaining its degree in other parts of the body, and then placing the hands on the abdomen.

224. In order to ascertain the state of its sensibility, the hand should be laid flat on the centre of the abdomen, and then pressed successively on every part of it, observing at the same time the patient's countenance, which will at once indicate pain if the abdomen be sensible. Care should be taken not to make pressure with the ends of the fingers; for then, by being applied to one point, it becomes considerable, and will excite pain where there may be no disease.

225. Finally, to determine the presence of fluid in the cavity, if the patient cannot get out of bed, it becomes necessary to render the abdominal muscles tense, but if possible it is better to place him in the erect posture; then laying one hand steadily on the side, percussion should be made with the fingers of the other.

226. When flatus is suspected to be confined in the intestines or peritoneal cavity, percussion should be made with one or two fingers; the phenomenon will, however, be made more evident by the aid of the stethoscope applied on the abdomen.

EXAMINATION OF THE DIGESTIVE APPARATUS.

227. The observer should first examine the state of the tongue and mouth, then the manner in which deglutition is performed, and the effect which the passage of the food produces on the œsophagus: he will inquire concerning the state of the appetite and digestion, and also whether the breath exhales any particular odour: if there be vomiting, it will be advisable to know how soon after taking food it occurs, and what are the appearances which the matter vomited presents. If the bowels be constipated, then the tenesmus, flatus, sense of distention, character of the stools, and the existence of hæmorrhoidal or other tumours round the anus, form the proper subject of inquiry. Attention should, in the next place, be paid to the degree of sensibility manifested by the different parts of the digestive system,

nd the various modifications they may present in refe- ence to their form, size, hardness, temperature. Lastly, . rapid view may be taken of the systems that are con- nected by sympathy with it, as well as of the manner in which the process of nutrition generally is carried on. t is under this head that we generally find included the headache, dull pain of the limbs, and cramps, which so often accompany affections of the intestines; and also the marasmus, peculiar expression of the countenance, and altered colour of the skin.

228. We shall now recur to these different phenomena, and treat of each of them more in detail.

229. *The Tongue.*—Its colour may be white, dirty grey, yellowish white, with red dots, red more or less deep, or it may be brown, dusky, or even black. These different shades, which are sometimes observable at the same time, may occur on the whole surface of the tongue, or only on some part of it; its base and centre are usually white, brown, or yellow; its margin and point red. These conditions are attended with more or less of dryness, which sometimes goes on to such a degree as to make the surface chipped and rough like a rasp. Sometimes, however, it is red, dry, smooth, and rounded at its point; at others elongated and pointed; lastly, it may be flat and broad, but then is moist and free from redness. As to the colour of the tongue, we may here remark, that when its point and margin are red, and its base white, we should make some estimate of the effect of the contrast of the two colours, by which the red may be made to appear more deep than it really is.

230. The tongue is frequently covered with a coating, more or less thick, whose colour is variable, being either whitish, yellow, grey, brown, black, or dusky, adhering intimately to its surface, or capable of being easily detached from it; in which case it leaves it red, and stripped of its epidermis. This coating does not extend to the margin of the tongue.

231. The tongue may be enlarged and swollen, so as

to protrude out of the mouth when it is inflamed, or it may be covered with small white vesicles or aphthæ. These different conditions may lead us to suspect the following derangements :—

232. The red and dry tongue indicates inflammation of the stomach and small intestines.

233. When it is dusky and tremulous, it marks acute inflammation of the intestine, particularly of its ileo-cæcal portion.

234. When white and expanded, it usually indicates chronic irritation of the intestinal canal, or derangement of the chylopoietic viscera, also certain nervous affections.

235. *State of the Mouth.*—The lips and teeth may be dry; and covered, under the same circumstances as the tongue, with a coating which may be considered as indicating intense inflammation of the gastro-intestinal mucous membrane.

236. *Vomiting.*—This may occur without any effort, immediately after deglutition, as in cancer of the œsophagus; in which case the food is covered with mucus, but has suffered no change, except that by mastication. In other cases it occurs some time after the food has passed into the stomach, when it is found changed more or less. It may be habitual or accidental, may occur with or without effort, afford sensible relief, or produce serious accidents, such as cramp, violent pains of the stomach, &c.; finally, it may take place without deranging the health in the slightest degree.

237. The contents of the matter vomited must, of course, be various—consisting of half-digested pieces of food, mucus, yellow or green bile, aqueous and colourless fluids, or such others as have been drunk. In some cases it is black or brown, resembling chocolate; in others it consists of coagulated blood, or fæcal matter. Pus, biliary calculi, lumbrici, have been brought up vomiting; the quantity of the matter ejected must be very variable. In its passage along the throat and œsophagus it gives rise to a dry and parched sensation.

238. *Alvine evacuations.*—These may be soft, fluid, yellow, brown, or black, intensely fetid; or they may be colourless, grey, harder than natural, marbled, or elongated and compressed, as occurs in cases of scirrhus of the rectum. In some instances the stools consist chiefly of greenish bile, mucus, and an acrid serous fluid; in others they are tinged with blood, or intimately blended with it; finally, they may be mixed with pus, sanious fluids, layers of membrane, or different sorts of intestinal worms.

239. Tenesmus, sense of heat, lancinating pains, are often excited at the arms and lower part of the rectum by the passage of the fæces, and sometimes even along the anterior part of the thighs, as in dysentery. In some cases, on the contrary, the colic pains which previously existed, cease altogether after the evacuation. When any acute pain is seated in the rectum, it becomes necessary to introduce the finger, and ascertain its cause. It is in this way that we discover the various alterations which so frequently occur; such as contraction of the gut, excrescences, hæmorrhoids, foreign bodies, &c. &c.

240. *Sensibility.*—In order to judge of the sensibility of the abdomen, it is not sufficient merely to question the patient; pressure should be made on different parts of the cavity: for it sometimes happens that there is no sensation of pain except it be compressed. The mode, as well as the degree of the pressure, will be different, according as it is sought to determine the sensibility of the walls of the cavity, or that of the contained viscera. Its direction may be perpendicular to the point on which the fingers are applied, or it may be so oblique as to affect only the part beneath it. Thus, though direct pressure affects the stomach, that from above downwards acts against the transverse colon.

241. The observer should note with care the sort of pain caused by this pressure, as well as the region in which it is felt: thus, if in the epigastrium, it indicates inflammation of the stomach or transverse colon, ac-

cording to the direction in which it is applied; if in the umbilical region, it marks that of the small intestines and mesenteric glands; towards the loins, between the false ribs and crest of the ileum, it indicates inflammation of the kidneys, or ascending or descending colon, according to the side at which it exists; in the hypogastrium it coincides with cystitis or matritis: in the iliac regions it induces a suspicion of inflammation of the cœcum at one side, or of the descending colon at the other.

242. Pressure may not excite any pain in some cases; it may even diminish it, as in painters' colic; so also when it is directed, not against the part affected, but on those of its neighbourhood. In these cases there is no heat at the surface, and the general symptoms of acute inflammation of the intestines are wanting; or if they exist, they are disguised by stupor, or some affection of the nervous system.

243. In all cases the temperature of the different parts examined should be attended to, and compared with the state of the sensibility. In acute inflammations of the intestinal canal, the surface of the abdomen is usually hot, dry, and even pungent; its degree marks that of the inflammation.

244. *Size and hardness.*—An increase of size may depend on flatus, which may be general or partial, and confined to some particular part, as the epigastrium, or one of the hypochondria. By percussiun a clear sound is emitted, which proves that the effect is owing to the presence of an elastic fluid; but when the increased size is caused by a tumour, percussion produces a dull sound.

245. Tumours in the abdomen may be prominent and visible, or they may be so situated as to be discoverable only by careful examination. Their situation should always be stated, and also all the other important circumstances connected with them; for instance, whether they are hard, soft, irregular, or nodulated; pulsate or fluctuate; whether the pulsations are synchronous

ith those of the pulse, are produced by the impulsion an adjacent artery, or by the expansion of their own alls.

246. A tumour in the epigastrium may make us sus- ect an organic disease of the stomach or pancreas; at e umbilicus, it indicates some affection of the small testines; but in these cases we should not forget that durated fæces may accumulate in the alimentary ca- al, and simulate tumours of a very different character. n such cases we may be assisted in our diagnosis by nowing when the patient was at stool, and also by aking pressure on the abdomen, which will sometimes isplace the hardened fæcal matter.

247. When any increased development occurs in the ypochondria, we suspect some organic affection of the ver or spleen, but we ought to ascertain whether the lteration of size depends on a dilatation of the abdo- en, or exists in the thorax. In the former case, the nterior extremity of the ribs, and lower border of the horax, are projected forwards; in the second, the con- exity of the ribs is merely increased.

248. The abdomen may in some cases be more or ess contracted, so that its interior paries is compressed pon the vertebral column. This is most perceptible n the epigastric and umbilical region, and occurs enerally in nervous or painter's colic.

249. In some cases, though rarely, evacuation by tool is altogether suppressed, the abdomen becomes wollen, and irregularly distended, and then vomiting supervenes. As these phenomena may arise from trangulation, internal as well as external, examination hould always be made to ascertain whether there is hernia, which may be the cause of the derangement. f this does not exist, we should then endeavour, by ressure directed to the different parts of the abdomen, o discover whether the suppression be not caused by an ccumulation of fæces; if not, it may be caused by an nternal strangulation.

250. The throat and fauces should always be exa-

mined, particularly if any pain be referred to these parts, as they are not unfrequently covered by false membranes, or attacked by ulceration and gangrene. The condition of the functions with which the digestive system sympathizes should also be attended to; as the pulse, skin, expression of the face, the existence of head-ache, dull pains or cramps; lastly, in cases of intense inflammation of the gastro-intestinal mucous membrane, the state of the mind should be noted.

EXAMINATION OF THE URINARY ORGANS.

251. It is usual to begin by inquiring whether the patient feels pain in the loins, along the course of the ureters; in the hypogastrium, perinæum, or rectum: pressure with the hand should then be made, to ascertain whether there is any tumour in these parts, or whether their sensibility is increased. Thus pain in the loins, vomiting, numbness along the anterior part of the thigh, with (in some cases) retraction of the testicle, indicate inflammation of the kidney.

252. *Urine.*—Its characters are, of course, extremely various. In some cases it is clear, limpid, pale, watery: in others turbid, viscid, purulent, saffron-coloured, or red: it may contain blood intimately blended or coagulated, also in some cases false membranes; in others, it deposits a thick mucus, like the white of egg, as occurs in chronic catarrh. It sometimes, as in gravel, leaves a red sabulous deposit on the bottom of the vessel, or particles of uric acid, and still more rarely of oxalate or phosphate of lime; and lastly, even real calculi. If its quantity is excessive, and if there be a constant inclination to evacuate the bladder, or the reverse, it should be noted; likewise if its expulsion be difficult or painful, and also the seat of the pain. When abundant its taste will determine whether it is such as occurs in diabetes mellitus. Its smell should be attended to, as it may be pungent or even ammoniacal. The size of the hypogastrium should always

be marked: in some cases it is necessary to examine through the rectum to discover the state of the prostate gland.

253. The most usual causes of these affections are suppressions of habitual discharges, gout, stricture, the injurious habit of retaining the urine when there is a disposition to evacuate it: on these several particulars the patient should be questioned, and our inquiry should be directed also to determine how far they are connected with organic lesions of the brain or spinal marrow.

EXAMINATION OF THE GENERATIVE SYSTEM.

254. The mode of investigating the different symptoms induced by diseases of the generative organ differs in the two sexes.

255. In man the parts affected can be viewed; hence the observer has only to describe what he sees; but he ought to pay particular attention to the cause which has produced the disease. We shall, for the present, merely refer the reader to the part of this work which gives the symptoms and characters of each of these affections. As to those which are connected with the generative system in females, they are more complex, and require more particular attention.

256. The best means of examination is the touch, which enables us to ascertain the state of the vagina, uterus, and adjacent cellular texture.

257. The touch consists of introducing into the vagina one or more fingers, while the other hand is placed on the abdomen, for the purpose of ascertaining the state of the uterus and its connexions.

258. It may be performed as follows: the bladder and rectum being previously unloaded of their contents, the physician proceeds to examine the uterus, the patient standing or laid on her back, according to circumstances: she should stand up when it is intended to examine a case of relaxation of the vagina, prolapsus uteri, or, in a word, any affection in which it is neces-

sary to estimate the weight and mobility of the uterus; she should be lying on the back in order to have the state of the ovaria ascertained, or any other disease besides those just mentioned. In this latter case, the patient's head should be supported by pillows, so as to be raised above the trunk, the legs should be semiflexed, in order to relax the abdominal muscles. The index finger of the right hand is most usually employed, and if the patient be standing, the physician kneels on the opposite (the left) knee. When the finger touches the neck of the uterus, pressure should be made with the other hand placed on the abdomen, so as to force down the uterus, which is felt as a hard and somewhat moveable body.

259. *Examination of the Uterus in the healthy state.*—The neck of the uterus somewhat resembles the extremity of a cylinder slightly flattened from before backward; it projects more posteriorly than anteriorly; its centre is marked by an oval aperture, whose longest diameter is from side to side; in females who have had children, this is from five to eight lines long; in the adult virgin it is about three. As this opening is placed nearer to the posterior than anterior part of the neck, it causes the anterior lip of the os uteri to appear somewhat thicker. The portion of the neck which projects into the vagina is about four or five lines anteriorly, and a little more posteriorly; its thickness from side to side is from eight to ten lines, and from before backwards from six to eight, as the neck is somewhat compressed in that direction. In women who have borne children the neck is thicker, more rounded, and the orifice is more open; its margin, uneven and puckered, sometimes presents one or two depressions, particularly at the left side. The neck of the uterus is about an inch in length, but it may be much more, which may lead to mistake, unless attention be paid to the projection formed by the two lips of the orifice, which will distinguish this from any of the tumours developed in the uterus.

260. *In disease.*—The observer should examine whether there is any hardness at the neck of the uterus, or in its vicinity; if there be a tumour, whether it is hard or soft, is attached by a broad base, or slight pedicle; whether the orifice is dilated, giving passage to a tumour, foreign body, polypus, fungus, &c.; or whether it contains a fluid accumulated in it, as occurs when the menstrual flux is retained: this may be ascertained by the fluctuation. The size and weight of the body should be ascertained, also the length of the neck, the state of the os tincæ, its sensibility and temperature, which is sometimes increased, as in hysteritis. The nature of the fluid by which the finger may be stained should not be overlooked, whether it is blood, pus, sanies; what its colour is, &c. The touch will also ascertain the existence of spasm of the vagina, or its sphincter, and the consequent accumulation of menstrual blood, or mucus; it will distinguish tympanitis of the intestine from that in the uterus, ascites from uterine, or ovarian dropsy, prolapsus of the vagina or matrix from hernia, and anteversion from retroversion of the organ, and in some instances the diseases which occur in the cellular tissue surrounding the vagina and rectum: in this last case it becomes necessary to introduce the finger into the anus also.

261. We cannot conclude these remarks without recommending to the notice of the reader the *speculum uteri* constructed by M. Recamier some years since. By means of it we can correct the errors and remedy the deficiencies of the touch, and gain a view of parts that seem totally removed beyond the reach of inspection.

262. After having examined the state of the organ itself, the inquirer should proceed to investigate the sympathetic phenomena to which its diseases give rise. The folllowing are the points to which his attention should be directed; the pain the patient suffers, and its characters, whether it is pulsating, lancinating, &c.; its situation, and whether it is increased by pressure;

whether any sense of weight is felt in the rectum, or painful contractions in the uterus; whether the pain extends to the loins, the region of the sacrum, &c.; whether the menses are more or less abundant than usual, or occur at irregular periods; the character of the evacuation, if it is pure, or mixed with some other fluid; the existence of any vaginal or uterine discharge; whether the patient has had children, or is pregnant at the present time; the existence of any tumours in the abdomen, their probable cause, and progress; if there be a fluctuation, whether the fluid changes place as the patient varies her position; the existence of retention or incontinence of urine; and, finally, the state of the digestive function.

263. To complete what has been here suggested on the examination of the abdomen, it remains only to say a few words on a peculiar state of that cavity, which occasionally occurs, namely its hardness. This condition sometimes arises from the intestines contracting adhesions with one another, or with the peritoneum lining the abdomen; in such cases pressure made on the parietes of the cavity will displace, to a greater or less extent, the contained viscera: this occurs in chronic peritonitis. The hardness, in other instances, is caused by tumours in some of its regions, and is then considerable, unless the contents are fluid, which may be ascertained by the fluctuation. These tumours should be examined with great care, to determine whether they pulsate; and if so, whether the pulsation is synchronous with that of the pulse. Each of the organs should be examined in detail, as well as the functions which they perform, in order that the positive information supplied by the organ affected may be strengthened by the negative evidence deduced from this investigation of the other viscera. This is frequently the only means we possess of removing the difficulties that beset the diagnosis of these obscure affections. The hardness is sometimes diffused generally, whilst the abdomen becomes excessively sensitive; then gentle pressure should

be made on different parts, to ascertain the degree of their sensibility, the heat of the skin, &c. The observer should inquire if the bowels be constipated, and examine the state of the pulse, which is usually small, concentrated, and frequent: vomiting sometimes occurs: this gives him occasion to look at the colour of the tongue, and at the same time note that it is broad at its extremity; finally, if the disease occurs in a female, it becomes necessary to ascertain whether she did not lately lie-in. These symptoms decide the complaint to be peritonitis. We shall now conclude these remarks by stating the phenomena furnished by percussion.

264. *Percussion* gives different results, according to the parts to which it is applied.

265. The sound emitted is sometimes like that of a drum, and indicates the presence of some gaseous fluid in the intestines or peritoneum. We can generally ascertain its existence in the latter situation by placing a stethoscope on the part which gives the tympanitic sound, and then striking the abdomen gently with the nails, when a very clear sound is heard, the character of which is intermediate between the proper tympanitic sound, and that produced by striking an empty jar with the finger.

266. Percussion sometimes produces only an obscure, or altogether dull sound; in which case, if the abdomen be struck with one hand, whilst the other rests on an opposite point of it, the latter receives an impulse communicated by the fluid contained in the peritoneum.

267. In cases of effusion, it becomes necessary to ascertain whether the fluctuation is sensible in every part of the abdomen, or is confined to some particular part of it, which is the sign of encysted dropsy.

268. If the abdomen gives, at its most prominent part, a tympanitic sound whilst the patient is lying down, and if, when he stands erect, the sound is dull in the depending parts, it indicates the existence of ascites, together with flatus in the intestines; for these,

by their greater lightness, occupy the higher situation, when the fluid, by its gravity, sinks to the lower.

269. But if, when the dropsy is considerable, a fluctuation is perceived at the most prominent part of the abdomen, whilst at the sides towards which the intestines incline the sound is tympanitic, we may infer the existence of encysted dropsy.

270. *Recapitulation.*—In summing up the symptoms which characterise the diseases of the abdominal viscera, we see that they differ according to the functions with which these organs are connected; and therefore that it is in the disturbance of these functions that we are to seek for the means of distinguishing them.

271. Pressure is the first means which we ought to resort to, as by it we ascertain the seat of the pain, and the organ affected. The patient, however, sometimes feels it himself from the commencement of the attack, and points to its situation. Its degree and extent should next be ascertained, namely, whether it extends over the cavity, or is confined to some part of it: the heat of the surface should at the same time be noted. Irritation of the stomach and transverse colon is marked by increased sensibility in the epigastrium; that of the liver, by pain in the hypochondrium and right shoulder; that of the small intestines and mesenteric glands, by pain at the umbilicus;—of the ascending and descending colon and kidneys, by pain in the lumbar regions;—of the ileum, cœcum, and ovaria in females after accouchement, by pain in the iliac fossæ; and that of the bladder, uterus, and rectum, by pain in the hypogastrium and perinæum, and by the propensity to make water or go to stool; finally, peritonitis is marked by great sensibility all over the abdomen, increased by the slightest pressure, but this seldom exists to any such degree in inflammation of the digestive tube.

272. Again: the observer should attend to the state of the tongue, whether it is moist or dry, white or red, clean or coated:—the state of the digestion and the symp-

toms which indicate the various lesions of the alimentary canal: if there be vomiting, what is the nature of the matter; also the appearance of the alvine evacuations. Diarrhœa indicates irritations in the large intestine, whilst obstinate constipation furnishes grounds for suspecting the existence of peritonitis, concurrently of course with the other indications of this affection. He should ascertain whether the intestines are glued together, in which case, by pressure on the abdomen, they are displaced, as it were, "en masse;" this marks chronic peritonitis. When percussion indicates a fluctuation in the cavity, it then becomes necessary to attend both to the present symptoms and previous history, to determine whether it is an encysted dropsy, or ascites; and if it be the latter, whether it is symptomatic of an affection of some organ in the abdomen or thorax, or depends on chronic inflammation of the peritoneum.

[The state of the muscles is often of itself sufficient to mark the existence of irritation of the mucous membrane, even without the aid of other symptoms, such as heat of skin, redness of tongue, head-ache, &c. On exposing the abdomen, and laying the hand on its surface, the muscles are instantly thrown into action, and present their outlines distinctly and strongly marked. It is this tense and rigid state of the muscles which prevents the indication of sensibility, by bearing off the pressure from the subjacent parts.]

273. Pressure will determine the presence in this cavity of a tumour: its seat will pretty nearly mark the organ affected, but not with positive certainty, for sometimes a viscus is drawn somewhat out of its place, and the pressure which it produces on the adjacent parts, by disturbing their functions, will render the diagnosis obscure.

274. Percussion will indicate the degree of consistence of these tumours, the sound being dull if they are solid, and clear and tympanitic if they be produced by an elastic fluid; finally, if the tumour pulsates, it will

be necessary to determine whether the pulsation is produced by elevation of its whole mass, or by dilatation of its walls; if it be the latter, and also synchronous with the stroke of the heart, it is referable to aneurism of the aorta.

275. When any local pain or particular symptom, any accidental discharge, or alteration in the state of the alvine evacuations, urine, or menstrual flux, indicates a derangement of the rectum, uterus, or bladder, examination by the touch should be made, and, if necessary, with the speculum above recommended.

276. We cannot conclude these remarks on the methods of examination applicable to affections of the three cavities, without again urging the necessity of paying to each of them a degree of attention proportioned to its severity, and also to its complication with others. It should not be forgotten that the physician who wishes to arrive at an accurate diagnosis, should not be satisfied with examining the cavity which contains the organ apparently affected: he ought to go farther, and ascertain whether others are not affected at the same time; for symptoms are not merely the indication of a lesion of one organ—they are phenomena common to several; they are effects, with whose theory and cause we are but imperfectly acquainted: the observer, therefore, should never omit examining the three cavities; it is the only means by which he can collect complete histories of cases, arrive at a sure diagnosis, and practise his profession with success.

METHOD OF EXAMINATION APPLICABLE TO DERANGEMENTS OF THE PRIMARY TISSUES.

277. After having treated of the method of investigating the diseases of the organs contained in the three great cavities, it only remains for us to say a few words on the derangements of those organic systems which enter into the composition of the *parietes* of those cavities, and of the upper and lower extremities; with this

view we shall point out the plan to be pursued in examining affections of the cellular texture, skin, muscles, mucous and synovial membranes, lymphatics, veins, and nerves.

278. When the disease exists in the skin, or is seated in the subcutaneous cellular texture, it is easy to ascertain its chief characters by the sight and touch. The following rules will serve as a sufficient guide to the observer in this investigation.

279. The precise part of the skin that is affected should first be stated; also whether the disease is local —confined to one or two spots, or is diffused over the whole surface. Thus, for example, erysipelas in general is found only on some particular part of the skin, whilst *zona* encircles the whole trunk; tinea capitis attacks the hairy scalp, and measles and small-pox cover the entire surface of the body. It is necessary to ascertain from the patient whether he ever had the disease before, what part of the body it occupied, whether it continued in one spot, or changed its place, as so often occurs in erysipelas.

280. Any change of colour presented by the skin or mucous membranes should always be stated; also whether it is diffused, and loses itself insensibly in the adjacent parts, or is bounded by a defined line; we should also note the effect of pressure upon it; for in some cases the change of colour continues even when it is pressed; in others, the blood flows back rapidly into the capillary vessels of the part; and lastly, we sometimes find that this occurs very slowly. These things deserve attention, as indicating the degree of activity in the capillary circulation, and the vitality of the part affected. The blood sometimes stagnates in the capillary vessels, assuming a blue colour, as we see in certain spots on the skin: sometimes, on the contrary, it is red, presents all the characters of arterial blood, and gives to the skin a bright red colour. As, however, the various shades of colour presented by the skin and mucous membranes are almost infinite, we shall not extend

these remarks farther; it is quite sufficient to indicate the method of ascertaining, and the necessity of attending to them.

281. When we have to examine a case of eruptive fever, it is necessary, in the first place, to ascertain in what part of the body the eruption commenced, and then the parts to which it gradually extended. In cases of small-pox and varicella, we should always examine those parts of the body which are not exposed to the atmospheric air, such as the arm-pits and loins, in order to ascertain whether it exerts any influence on the progress of the eruption; attention should also be directed to the roots of the hair, to see whether the pustules correspond with the pores of the skin. In every species of eruption the colour of the areola deserves notice, as well as that of the pustule, which presents many shades, caused by the liquid which it contains: when it is depressed at its centre, as occurs in small-pox, we may ascertain, by dissecting a pustule at an early period, whether the depression is caused by a cellular band, whether it consists of only one cell, or is divided into several.

282. Tumefaction of the skin is either diffused or circumscribed, and presents a vast variety of characters, according to the affections with which it is connected; thus, in small-pox and varicella, it assumes the form of single or confluent pustules; in herpes, of irregular crusts; in erysipelas, of vesicles caused by the effusion of a serous fluid under the epidermis; in emphysema, of an elastic swelling, which crepitates when pressed on. In these different cases the state of the skin, the extent of the swelling, and the effect of pressure upon it, should be stated.

283. When gangrene occurs, we should always ascertain whether the skin had been previously red and inflamed, or whether the disease commenced with a black or white spot, and thence gradually extended to the neighbouring parts; the general symptoms should be attended to, and inquiry should be made to determine

whether the mortification arose from inoculation of some morbid matter.

284. In some affections of the cellular texture and mucous membranes, such as furuncle, ophthalmia, &c. &c. it is useful to ascertain whether the patient had many previous attacks of the disease. In exanthematous affections the progess of the inflammation from one mucous membrane to another should be noted; thus it usually begins with the conjunctiva, and then proceeds from above downwards, successively attacking the nasal fossæ, throat, trachea, and bronchi.

285. *Pain.*—The character of the pain often leads us to ascertain the seat of the affection of which the patient complains; hence it should be particularly attended to. The effects of pressure on the skin should be noted; but in order to press it alone, it must be pinched between the fingers, as otherwise we shall not be able to determine whether the pain arises from an affection of the skin, or of the subcutaneous cellular substance.

286. Pain of the skin is marked by a sensation of heat, itching, and tension; that of the cellular texture, on the contrary, is pungent and throbbing; but both are fixed and limited to the seat of the disease.

287. When the mucous membrane is affected, it is quite otherwise, as the pain is sometimes felt only at the extremity of the canal, there being no indication of it in any intermediate part: thus irritation in the bladder, caused by the presence of a calculus, is often indicated only by pain at the extremity of the glans penis: and irritation in the intestines, caused by worms, is marked by a sense of constriction in the throat, or itching at the nares, &c.

288. The changes induced in the secretion of the mucous membranes should be carefully examined: its quantity may be increased, or its colour and consistence altered. The observer should ascertain the temperature of the part affected, and also whether the sensation which the heat gives is parched or pungent: if there be any ulcerations, their appearance, colour, state of their

margins, as well as of the adjacent parts, should be noted. In cases of exanthematous eruptions, the cause which may have produced them should be inquired into, whether it be epidemic, contagious by inoculation, or the use of certain aliments, such as muscles, lobsters, &c. In such cases attention should always be paid to the state of the mucous membranes, as in these the affection usually commences, the skin being attacked but secondarily. When reporting the case, the day on which the fever set in should be stated; then the appearance of the eruption, and the changes induced in the previous symptoms at this period; in the next place, the time at which the suppurative stage began, and its effects on the system generally, which are usually manifested by a new access of fever; and finally, the progress of desquamation or desiccation. In cases of small pox, particularly when it is confluent, the state of the lungs and their membranes should be indicated; and when the disease terminates favourably, the state of the skin, and appearance of the cicatrices, should not be overlooked.

EXAMINATION OF THE MUSCULAR, FIBROUS, SYNOVIAL, VASCULAR, AND NERVOUS SYSTEMS.

289. After having ascertained whether there exists any swelling, heat, or redness, in the integuments covering the part to which the patient refers the pain, the observer proceeds to determine which of the primary textures is affected, viz. the muscles, membranes, arteries, veins, nerves, or lymphatics.

290. These should be successively passed in review: the observer will have to ascertain whether the articulations are swollen, present symptoms of a fluid effused in their cavities, or of calcareous deposits. When the muscles are sensible to the touch, and when motion causes pain, it becomes necessary to learn the character of the latter; for if it consists in a sensation of dragging, tearing, or lassitude, it indicates fibrous or synovial rheumatism.

291. When the pain is felt along the course of the nerves, arteries, veins, or lymphatics, the observer should ascertain whether any tumour exists upon them, or whether they give the sensation merely of a hard cord sensible to pressure. The pain in such cases is very variable in its character. Sometimes it is marked by a shooting sensation, taking the course of the nerves from the centre to the extremities, or *vice versâ*: in other cases there is a feeling of numbness, heat, or cold; and lastly, it may be continued, or may only recur at intervals. Its mode of commencement should be stated, and also the effect produced upon it by heat, cold, moisture, dryness, rest, or motion; or finally, by pressure applied to the muscles, or in the course of the nerves. When the affection depends on the puncture of a vein in bleeding, the pain and swelling extend from the wounded point along the course of the vessel towards the heart.

METHOD OF MAKING POST-MORTEM EXAMINATIONS.

292. No department of natural science has made within the last twenty years a more decided progress towards improvement than medicine. For the precision and certainty which are now attained in the diagnosis of diseases, we are mainly indebted to pathological anatomy. A knowledge of the many advantages which have followed the cultivation of this pursuit should induce us to omit no occasion of prosecuting it farther, at the same time that it encourages us not to be deterred from it by a few moments of trouble or disgust. When we have followed a case from its commencement to its termination, and have carefully noted all its details, we shall be amply requited for the trouble of making the *post-mortem* examination by the pleasure of finding our diagnosis correct, or the satisfaction of having an opportunity of altering it, if it has been erroneous. But in order to derive from this examination all the advantages which it is capable of affording, the physician should, whilst conducting it, be divested of every preconceived opinion, and be guided solely by the

desire of discovering the truth. These remarks we shall not prosecute farther in this place; it is sufficient to refer the reader to what we have already stated, sections 6 and 23.

293. We shall now proceed to detail the method of examining the parts contained in the head, chest, and abdomen, and the means of discovering the different species of alterations which they may present:—

294. *How to open the Head.*—The shortest method of opening the head, and which is therefore the most convenient in the dissecting-room, is, after supporting the back part of the head on a block, to make a circular incision through the scalp around the head, passing along the frontal sinus, the petrous portion of the temporal bone, and the occipital protuberance. Having made this down to the skull, the latter may be broken all around by the claw of a hammer, taking care not to tear down the dura mater or brain: when the vault of the skull is detached, it may be torn off by introducing the end of the hammer between the divided portions of the frontal bone. In some cases the dura mater adheres so closely to the parietal bones, that it is impossible to detach it without using the scalpel. Whilst going through the first step of the examination, the quantity of blood which flows from the incision in the scalp should be observed, and also the state of congestion of the face.

[The method pointed out in this section for the opening of bodies answers very well in the French hospitals, as the greater number of those who die are consigned to the dissecting-rooms immediately after the examination is completed. It is, however, altogether inadmissible in private practice, and cannot be adopted even in hospitals in this country, where the bodies are almost invariably claimed by the friends, for the purposes of burial. When opening the head, an incision may be made through the scalp from ear to ear, transversely over the vertex; two flaps may then be made of the integuments, one of which should be reflected forwards

over the face; the other backwards over the occiput; the bones can then be sawed through all round. After the brain has been examined, the roof of the skull may be restored to its place, and the flaps drawn over it, and united by suture. The thorax and abdomen may be laid open by a straight incision made along the central line; the integuments may then be dissected off the ribs, for some way on each side, so as to expose their attachments to the cartilages, which should be cut through with a strong scalpel; and the triangular flap thus formed, consisting of the sternum and the cartilages of the ribs, can be readily turned upwards on the neck and face of the subject. In addition to the straight incision from the sternum to the pubes, through the integuments of the abdomen, it is usually necessary to make another at each side, at right angles with it, extending into the loins, in order to give greater room for continuing the examination of the contained viscera. When these incisions are properly united, there will be no appearance of unnecessary mutilation. It has been lately proposed to open the spinal column from the inner side, namely, by cutting out the bodies of the vertebræ, after having removed all the thoracic and abdominal viscera. The process, however, is very tedious and troublesome; and as it can serve no other purpose than that of avoiding another external incision along the back, it cannot be recommended as being either useful or necessary.]

295. After the skull has been removed, the dura mater should be examined, in order to ascertain whether there is any fungous production upon it, or depression in the corresponding part of the bony arch; when adhesion exists, when the sinuses are gorged with blood, the fact should be stated in the report. When pus or blood is effused between the membrane and bone, we should ascertain whence it comes; and should never omit to examine the scalp, to see whether it presents a wound, or the bone a fracture: finally, the dura mater should be washed, in order that we may be able to determine

whether any change of colour which it presents is owing to a fluid effused on its surface, or is produced by inflammation.

296. After these preliminary steps, we should proceed to divide the dura mater circularly with a scalpel or pair of scissars, and when the falx is detached, the whole may be drawn back, gently separating it from the arachnoid, in order that we may see whether any slight adhesions exist between them. Before the contact of the air has reddened the vessels of the pia mater, we should see whether they present any appearance of injection. After having ascertained whether pus, blood, or serum, is effused between the two layers of the arachnoid, or infiltrated between it and the pia mater, we should inspect the convolutions of the hemisphere, to see whether they are flattened; for when that exists to any considerable degree, it indicates an effusion of blood into the lateral ventricles.

297. Whilst examining the arachnoid membrane, we should recollect that in the healthy state this membrane is exceedingly thin and transparent, even at the summit of the hemispheres, and can scarcely be detached from any part without being torn, except opposite the *pons varolii*, where it presents some degree of firmness and thickness. Examination should then be directed to ascertain if it has lost its transparence, or presents on its surface any puriform exudation or false membrane. When viewed horizontally, it sometimes appears covered with minute granulations, giving it a velvety appearance: we should carefully avoid mistaking for these, small bubbles of air effused beneath the pia mater. Whenever it appears opaque, or studded with white points, it should be pressed on by the finger, in order to ascertain its degree of consistence, as in some cases it approaches that of cartilage. When the arachnoid is white and thickened, so as to resemble a false membrane, it should be detached from the pia mater, to discover how far each of these membranes is concerned in the alteration. Though at first sight it

occasionally appears red, we find the effect to depend on an alteration in the state of the vessels of the pia mater, which are found to be injected. When detaching the membranes from the surface of the brain, the finger may be insinuated between the convolutions, so as to draw them from within outwards, and then it will be easy to ascertain their degree of thickness, strength, and tenacity; and also, whether there exist any adhesions between them. We should thus pass in review successively the different parts of the arachnoid which line the base of the brain, the decussation of the optic nerves, and the *pons varolii*, as, from the loose connexions which exist in these parts, as well as the number and size of the vessels, effusions of lymph or of pus are more perceptible and more common than elsewhere, particularly in children.

298. Hitherto our observations have been confined to the membranes of the brain: we shall now proceed to its substance. The appearance of the grey substance should be noted: it may be of a slightly rosy tinge, or may present a sort of dotted redness, particularly when the pia mater is much injected; in other cases the texture of the convolutions is altered, being rendered soft, or almost diffluent, by inflammation and suppuration. An incision may be made from above downwards, across the substance of each anterior lobe, so as to penetrate through the lateral ventricles, and then, by compressing the brain from behind forwards, the fluid (if any be contained in them) may be made to flow forwards, and its quantity ascertained by receiving it in a graduated glass vessel.

299. The substance of the brain should, in the next place, be sliced off by several horizontal incisions, and any change, either of colour or consistence, carefully noted. In cases of "ramollissement," the existence of pus or serosity should be ascertained if possible; and whether the softening is connected with sanguineous injection. When effusion of blood has taken place into the brain, the change of appearance and colour of the

affected part should be stated; it is also necessary to ascertain the size and consistence of the clot, and whether it is enclosed in a membranous sac, or mingled wish a serous fluid; in a word we should describe the physical character of the clot, as well as those of the cyst which surrounds it. When a tumour is found developed in the brain or its investments, its mode of connexion with those parts should be examined, also the degree of compression which it exerts upon the substance of the brain, and the consistence of the parts of the latter which surround it. This can be ascertained by gently pouring water on the part; but when the membranes are affected, they may be washed in a vessel of water, and dissected according to convenience. The state of the corpus callosum, fornix, corpora striata, optic thalami, and pons varolii, should be fully stated, taking care, with regard to this last, to indicate the side of it which is particularly affected. When the ventricles are laid open, we should never omit examining with care the state of the serous membrane which lines them.

300. The cerebellum, medulla oblongata, and their membranes, should be dissected in the way just pointed out for the brain. In order to remove these parts from the occipital fossa, the tentorium cerebelli should be cut through, and after detaching the nerves, the medulla oblongata should be divided as far down as possible. If the patient has had a discharge from the ear, attention should be directed to the state of the bones which support the posterior lobe of the brain, particularly the petrous portion of the temporal bone; we should ascertain whether there is a caries of the bone, or any collection of pus, which may be recognized by its colour or smell; or finally, whether the dura mater is detached at any point from the skull. We should always endeavour to determine whether the disease commenced in the bone, membranes, or substance of the brain; and whenever any lesion of the cerebellum is discovered, the testicles, in the male—the ovaries,

uterus, and its connexions, in the female—should be carefully examined.

301. *Method of opening the Vertebral Column.*—The body being turned forwards on its face, the cervical vertebræ may be raised to a level with the dorsal, by placing a block under the neck. The great mass of muscle which fills up the depression at each side of the spinous processes of the vertebræ should be dissected away from the occipital hole to the sacrum (a large portion of the occipital bone having been previously removed by two cuts made by a saw from above downwards). The posterior or annular portion of the vertebræ being thus laid bare, it may be cut through with a chisel, or with a "rachitome," the cutting edge of which being placed on the transverse process of each vertebra, its division is easily effected by striking the instrument with a hammer or mallet; the same is to be done at the opposite side, and the portion thus insulated is then easily detached. A continuance of this operation will, in a short time, expose the entire of the medulla spinalis, as it lies enveloped in its membranes, which need not be in the slightest degree injured by it. The membranes, and substance of the spinal marrow, should then be examined, with those precautions which have been already detailed in the previous section.

302. *Opening the Thorax.*—The shortest and simplest process consists in dividing the cartilages of the ribs, as near as possible to their bony arches, with a strong scalpel, proceeding from below upwards, after having previously divided the abdominal muscles, which are attached to the zephoid cartilage. The sternum should then be raised up towards the face of the subject, which is facilitated by luxating the bone from its connexions with the clavicles, having previously divided the articular ligaments. By this process we avoid breaking the ribs, and leaving thereby projecting spiculæ of bone, which may wound the operator whilst engaged in examining the contained organs. When it becomes requisite to expose the cavity of the chest to a

greater extent, we may proceed according to the process recommended by M. Chaussier.

303. With this intent, a large elliptic incision is made in the integuments, commencing immediately below the clavicles and extending downwards towards the crest of the ileum, and thence forwards towards the margin of the pubis. After having made a similar incision at the opposite side, all the ribs, except the first and two last, are to be sawed through with a saw convex at its cutting edge; the sternum should, in the next place, be divided by a transverse cut. The upper part of this large flap should then be raised up, in order that its attachments to the mediastinum, lungs, and diaphragm, may be divided by a scalpel, so that being left attached to the pubes merely by a narrow band, it may be laid down upon the lower extremities. In this way a full view is got of the whole extent of the chest and abdomen, and the alterations presented by the different viscera may be examined as they lie in their natural situations.

304. When we want to examine the state of the large vessels at their origin, or the lower part of the trachea, it becomes necessary to saw across the first rib, and part of the clavicle at each side; after having turned back this flap, the blood should be wiped away, so as to expose the parts more clearly.

305. In examining the lungs, we commence by ascertaining whether there are any adhesions between the two layers of the pleura. When such connexions exist, they should be detached from the serous membrane, which gives an opportunity of seeing what their colour and consistence is; whether they consist of a single band or of several, and whether vessels are developed in their substance. In order to determine whether the corresponding points of the pleura are thickened, opaque, or injected, it should be removed from the lung or the wall of the thorax, and held up to the light, when any change of structure which it presents is at once perceptible. In doing this, care should be taken

not to attribute to the pleura a change of colour which may exist only in the false membrane. The serous membrane should be examined in every part of its extent, on the internal surface of the ribs, the diaphragm, and fissures between the lobes of the lungs. When, after detaching the bands of adhesion, the pleura appears red and injected, we should ascertain whether the redness exists in the membrane itself, or has taken place only in the subjacent cellular texture; when any fluid is contained in its cavity, its quantity, colour, and other properties, should be noted. In cases of interlobular pleurisy, care should be taken not to mistake an effusion enclosed amongst the adhesions for an abscess of the lung. When gangrene exists, its seat should be ascertained, as it may attack the false membranes, the pleura, or both. Where a communication exists between the pleura and bronchi, a probe should be passed along the fistulous canal, which may then be laid open, and the state of its walls examined; finally, if air be contained in the cavity of the serous membrane, it should be stated in the report.

306. When the lungs are removed from the thorax, incisions should be made through their substance, that we may be able to ascertain their colour, consistence, weight, degree of cohesion, and also whether they contain any fluid blood, serosity, or pus, infiltrated into them. In cases of gangrene, it is useful to determine whether it is circumscribed by a defined line, or is blended insensibly with the healthy structure, or whether this transition is effected by an inflamed portion of the lung. The bronchi are to be laid open in their whole extent, even to their final terminations, that we may ascertain the degree of consistence and colour of their lining membrane, and also whether it presents any effusion, false membrane, or ulceration. In pursuing this examination, we sometimes find some accidental substance developed in the bronchi, or their trajet dilated, or that they are contracted in some particular part. In some cases, also, we find air effused

under the pleura, or contained in some of the pulmonary lobules distended or torn, as occurs in emphysema of the lung.

307. In cases of tubercular excavations, we should not omit ascertaining whether they are covered with a false membrane, also whether they communicate with the bronchi. For a full description of the different changes of structure presented by the lungs, we shall refer the reader to the pathological articles which follow those on the diagnosis of each disease, and particularly to the description of the accidental tissues which we shall give in section 318.

308. When the heart is removed from its situation it may be cut across, in order that we may discover the thickness and consistence of its walls, the colour of its lining membrane, and the dilatation of its cavities. The state of the different orifices, their contraction, obliteration, ossification of their valves, &c. may be ascertained by the introduction of the finger, after which the ventricles, auricles, and great vessels arising from them, should be cut open to expose their cavities, and shew whether there is any thickening or induration of their coats, or change of colour in their living membrane. As the method of examining the pericardium is the same with that above pointed out when treating of the pleura, it is unnecessary to repeat it in this place; we shall merely observe that in all diseases of the heart and lungs the liver should be examined. In cases of aneurism of the aorta, it becomes necessary to inquire whether the dilatation extends all round the vessel, or occupies only one side of it; whether all the tunics are dilated, or only one of them. When rupture or ulceration exists, its seat should be noted, and also the manner in which the layers of blood are disposed in the sac.

EXAMINATION OF THE MOUTH, PHARYNX, LARYNX, AND TRACHEA.

309. Having put the neck of the subject on the stretch, a longitudinal incision is made along the me-

ian line, from the lower lip to the top of the sternum ; another may then be made in the course of the base of the lower jaw-bone ; the symphysis of the jaw is then sawed through, and its lateral halves separated, after having removed all the soft parts which are attached to its base. The same should be done with regard to those muscles which are placed on the lateral parts of the neck, and interfere with the examination of the œsophagus and trachea.

310. To examine the air-tube, it is necessary to remove the thyroid gland, and then make an incision along the whole extent of the trachea and bronchi, having previously sawed through the clavicle and first rib at each side. To what has been already said, when treating the mode of examining the bronchi, we shall here merely add that the state of the epiglottis and ventricles of the larynx should always be attended to.

311. *Examination of the Abdomen.*—This may be commenced by making a crucial incision through the parietes of the cavity, or a double elliptic one from the cartilages of the ribs, at each side of the pubes, and having detached the flap from this latter point, it may be turned upon the thorax of the subject. When the cavity of the abdomen is thus exposed, we can readily see whether there are any adhesions between the intestines, or between the two layers of the peritoneum, or whether there is any fluid effused within it. The digestive tube may be laid open in its whole extent with the "enterotome," and after having detached it from the mesentery, it should be washed and examined from the œsophagus to the rectum. We should attend particularly to the colour of the mucous membrane, and to the different appearances of congestion and inflammation which it presents; also to its degree of adhesion to the muscular coat, and to its thickness, consistence, and elasticity in different parts. When ulcerations, fungous excrescences, or cicatrices, exist, their extent and situation should be described on the report of the case.

As derangements of the gastro-intestinal mucous

membrane are exceedingly frequent, and as disputes constantly arise on the subject of its inflammation, it may be useful to describe the physical characters which this membrane presents in its healthy state, as the first step towards distinguishing the changes induced by disease.

312. *Appearance of the Mucous Membrane in the healthy state.*— 1st. The thickness and tenacity of the membrane in general diminishes from the stomach to the anus, but its degree of adhesion to the subjacent parts diminishes in the opposite direction. 2d. It is soft and pulpy in infancy, increases in density as age advances, but in some cases, in old persons, it again becomes soft as in children. 3d. In the fœtus it is somewhat of a rosy colour; in infancy it is of a pale colour; in adult age it is greyish white; during digestion, the part of the membrane which lines the stomach, duodenum, and the commencement of the ileum, is of a slightly rosy tinge. 4th. The membrane of the stomach is never marbled or studded with black spots in the healthy state. 5th. The age of the individual, the sort of death, the last agonies of life, the vicinity of certain organs, the nature of the matter contained in the canal, the time which has elapsed since death took place, the position given to the body (particularly whilst it was warm), the contact of air, are all so many causes capable of altering the appearance of the mucous membrane. 6th. The prominences, or villi, perceptible on the surface of the membrane are most numerous in the stomach (particularly at its pyloric extremity), and in the duodenum; their number gradually diminishes from thence along the course of the intestine. 7th. Mucous glands are not very apparent, or rather appear in a very small number, on the internal surface of the stomach and intestines.

313. After having examined the digestive canal, we should proceed to inspect the different organs contained in the cavity of the abdomen: the liver, gall, bladder, spleen, mesentery and its glands, kidneys, ureters, bladder, genital organs, aorta, vena cava, &c.

314. We shall conclude these remarks by recommending the examination of the lining membrane of the large arteries and veins in cases of eruptive fevers, particularly of small-pox. When giving the account of a *post-mortem* examination we should never omit to state how many hours have elapsed since death took place, and the position in which the body has been placed, for position exerts a material influence on the appearance of congestion presented by bodies after death.

MORBID PRODUCTS.

315. These remarks on the subject of the knowledge necessary to enable an observer to investigate the different species of alterations which occur in the human body, may now be concluded by a brief statement of the anatomical characters of the "non-analogous" accidental tissues—tubercle, scirrhus, encephaloid, melanosis, cyrrhosis, sclerosis, and scaly scirrhus.

316. *Tubercle* is the most common of all the productions of this sort; it is common to all organs, and generally occurs in several at the same time. Tubercles are found either in the form of spherical tumours, or of masses infiltrated into the substance of the organ in which they are developed; their size varying from that of a millet-seed to a small egg. They sometimes adhere intimately to the surrounding substance, and appear as if formed at its expense (*non-encysted tubercles*), at other times they are enclosed in a distinct membrane, whose character may be merely cellular, or approach that of fibro-cartilage: as this completely separates them from the surrounding parts, they are termed *encysted tubercles*.

317. In their crude state, tubercles consist of a grey, transparent, semi-cartilaginous substance, without any trace of vessels, and which, in process of time, becomes opaque and of a yellow colour.

318. Tubercles after some time become softened: the process begins at the centre and proceeds towards the circumference, until the whole mass is converted into a cheesy, pultaceous matter, and then into a curdy, puri-

form fluid, which, when expelled from its situation, leaves an ulcerated cavity; the latter may, though very rarely, be cicatrized by means of a fibro-cartilaginous structure.

319. *Scirrhus.*—This is white, grey, or bluish, somewhat semi-transparent, colourless, or very slightly coloured. In the crude state its consistence varies from that of hog's skin, which it very much resembles, to that of the intervertebral cartilages; scirrhus is usually divided into irregular homogeneous masses, which are again subdivided into lobules, united to each other by fibrous bands or dense cellular texture; it sometimes presents an alveolar or regularly radiated appearance, somewhat like that presented in the interior of a turnip: in such cases the scirrhus is so firm that the scalpel grates upon it as if it were cartilage.

320. When it becomes soft, its consistence and appearance resemble those of meat jelly, or a thick syrup whose transparence is disturbed by a dirty grey tinge, or by some blood; at other times it resembles honey, gum, or a grey pultaceous mass.

321. *Encephaloid.*—In its crude state encephaloid is somewhat more opaque and white, but not so firm as scirrhus. It consists of masses, sometimes lobulated, sometimes not so; these are usually disposed like the convolutions of the brain, and separated from one another by a very soft, delicate, or rather imperfect cellular texture, in which we find blood-vessels of rather a large size, but whose coats are very thin and weak. The subdivisions of the lobes, as in scirrhus, are marked by septa, or lines which are whiter than the rest of the tumour; they assume no regular distribution, and in some instances are but very slightly marked.

322. When encephaloid becomes soft, it resembles very much the substance of the brain when inclining to decomposition; when an incision is made into it, some drops of blood ooze out. If the softening has extended through the whole mass, it presents the appearance of a reddish or violet-coloured pulp, the consistence of which,

however, is variable in different parts of its extent. We sometimes find in these masses effusions of blood, either in the liquid or solid form, not unlike those found in the brain after hæmorrhage has taken place into that organ; at other times the blood is diffused amongst the encephaloid structure, in such a way as to resemble that in aneurismal tumours; and the resemblance in some cases is so complete, that the distinction between them can only be established by finding some portion of the encephaloid, which at once marks the true nature of the tumour.

323. These masses are sometimes enclosed by a sort of membrane, or by a semi-cartilaginous cyst, whose internal surface is lined by a soft, vascular, cellular structure; in other cases the cyst is incomplete in some parts of its extent, or it may be altogether wanting, the tumour being merely inclosed by some loose cellular substance: finally, we occasionally find serous effusions into the encephaloid itself, or into the parts which surround it. When exposed to the air, its surface becomes of a grey or somewhat greenish colour, and as it decomposes it exhales a very fœtid smell.

324. *Melanoides.*—This accidental production may exist in the form of single masses, enveloped in a cyst, infiltrated into the substance of organs, or lastly, in layers diffused on the surface of membranes. In some cases the masses are extremely small; they are, however, occasionally found as large as a nut: they are sometimes lobulated or nipple-shaped, united by cellular texture, but never penetrated by vessels.

325. In the crude state it is opaque, brown, or black, homogeneous, without smell or taste, somewhat moist, and of the consistence of a lymphatic gland.

326. When "ramollissement," or softening, begins, a thin reddish fluid, mixed with small black clots, can be forced out by pressure. After the softening is complete, the mass is converted into a thick dark pulp, which may be effused or infiltrated, so as to stain the surrounding parts.

327. Its chemical analysis, according to Breschet,

gives the following results—1st, coloured fibrine; 2d, a dark colouring matter, soluble in dilute sulphuric acid, or in a solution of subcarbonate of soda, which fluid it tinges of a red colour; 3d, a small quantity of albumen; 4th, subcarbonate of soda, phosphate of lime, and oxide of iron.

328. *Cyrrhosis.*—In the crude state this is somewhat of a fawn colour, inclining sometimes to greenish, and presents some resemblance to the supra-renal capsules in an adult. To the touch it feels flaccid, like fungoid productions, and when cut into it appears compact and humid; but though in some cases we find divisions which separate the mass into lamellæ, still there are no traces of fibres.

329. When cyrrhosis becomes softened, it assumes the appearance of a glutinous pulp, of a greenish brown colour, but without smell.

330. According to Laennec, who first described this accidental production, there are three species of it; 1st, cyrrhosis in masses; 2d, in layers; 3d, in cysts.

331. When it exists in the liver (which is the organ most frequently attacked by it), it assumes the form of small masses, never exceeding the size of a cherry-stone, and sometimes not larger than a grain of millet-seed. In such cases, these granular bodies being exceedingly small and numerous, and diffused through the whole substance of the liver, give it a homogeneous appearance, and a yellowish colour, not unlike that of the boot-leather: on closer examination, however, the liver is found to be studded with a multitude of small bodies, not unlike those hard, fatty granules, found in the subcutaneous cellular texture of the lower extremities in anasarcous subjects. The cysts which sometimes inclose these productions consist of a thin layer of cellular membrane, which renders them capable of being easily detached from the substance of the liver, in which they form and adhere when there are no cysts. The substance of the organ in these different cases shrinks, and becomes wrinkled and indurated.

332. Cyrrhosis has hitherto been discovered only in the liver, kidneys, prostate gland, epididymis, ovaria, and thyroid gland.

333. *Sclerosis.*—This was found infiltrated beneath the peritoneum in a subject affected with cancer; it was of a dull white colour, and not unlike cyrrhosis. It appears disposed to extend itself, but has not as yet been discovered in the softened state.

334. *Scaly Scirrhus.*—M. Laennec found this accidental production inclosed in a cyst, in the case of a person who died of a cancer: it was of a dull white colour, semi-transparent, and disposed in layers or flakes, like those of fish.

[It is very difficult to make a satisfactory classification of those accidental productions which are developed in the living body. Each species of them presents some modifications, according to the organs or textures in which they are found: in many cases several of them are found blended together in the same mass, so that it is difficult to ascertain which predominates; in other instances the shades of difference between them are so slight that it is difficult, if not altogether impossible, to determine to which species some particular accidental growths belong. These productions have, however, been divided into two classes: the first consists of those which are *analogous to some of the textures existing naturally in the body:* in the second are placed those which have no analogy or similitude to any thing found in the body during health. Hence has arisen the use of the terms "analogous" and "non-analogous" accidental productions. Under the former may be included those ossific deposits, fibrous textures, fibro-cartilage, cartilage, horn, and hair, which are developed by disease, and deposited in situations different from those in which they naturally exist. To these may be added the serous membranes which occasionally occur in some serous cysts, and the mucous membranes which line the course of fistulæ. To this class may also be referred that production, like enamel, which covers the heads of bones after

the termination of certain affections of the articulations, and also the synovial membranes which line false joints.]

[The nature and character of tubercle, the most fatal because the most common of the non-analogous accidental productions, have long engaged the attention of pathologists: on this subject a considerable difference of opinion still prevails. According to Laennec, tubercles go through three stages, each presenting a distinct set of characters. In the first they are small, transparent, colourless, about the size of a millet-seed, and are thence termed *miliary* tubercles. In the second they become yellow, opaque, and firm; in which form they are said to be *crude*, their consistence being about that of cheese. In the third stage the mass becomes softened; a passage for it is made by ulceration into some of the neighbouring bronchi, through which it is evacuated, and so is formed a tubercular cavity. Bayle and Laennec agree in considering tubercle to be a production *sui generis;* but the former pathologist considered the transparent granules, above described as the first stage of tubercle, to be a distinct production. Other writers are of opinion that they are nothing more than the lymphatics of the lungs, slightly altered in their appearance. This idea was inculcated long since by Morton and Portal, and has lately been revived by Broussais.]

[Dupuy, professor at the Veterinary School at Alfort, after having investigated the production of tubercles in several of the lower animals, has come to the conclusion that the matter of tubercle is, in the first instance, *secreted* in a semi-fluid state, which, after a while, becomes indurated. In several cases in which hydatids were developed in the lungs of animals, he found a pale liquid deposited between the external surface of the hydatid and the cellular membranes which invested it. This, when dried, perfectly resembled tubercle. In some cases the hydatid is destroyed, and the cavity which it occupied becomes filled with *tubercular matter, secreted by the cyst.* These observations are confirmed by Andral. He found in the liver of a rabbit a mixture of tu-

ercle and hydatids, the latter being in a great variety of conditions. Some were entire, and separated from he substance of the liver by a thin layer of condensed ellular membrane; others, also entire, were surrounded ay a matter not unlike a mixture of chalk and water; inally, a third set were broken down, so that only a few portions of their gelatinous structure could be recognized, the place which they occupied being nearly filled ip by the matter just described. These facts are important in many points of view, and particularly as hey throw some light on the opinions of Dr. Baron on the nature of tubercle. He considers that a transparent vesicle, which he calls an hydatid, constitutes he first stage of tubercle. It is quite true that tubercle and hydatids are frequently found together in the same part, and under every variety of form and size, and, as we have just seen, the one is often supplanted as t were by the other; but this is quite a different process from the conversion of the one into the other. If ydatids be living organized beings, according to the opinions of all those naturalists who have examined the *entozoa*, it is very difficult to conceive how they can be considered as identical with tubercle, which all agree in regarding merely as an accidental product developed in the substance of organs.]

[M. Andral contends that tubercle is the product *of a morbid secretion*, and that this process is preceded by an active congestion in the part, similar to that which occurs in every case while secretion is going on, whether healthy or unhealthy. Meckel has long since advanced the same doctrine. He says, (vol. i. p. 531), "accidental formations are sometimes produced by a peculiar fluid effused expressly in order to give them origin. This is the way in which all accidental textures are formed, whether they have or have not any resemblance with parts already existing in the economy." Mr. Wardrup seems to have come to the same conclusion, at least with regard to one of the productions of this class. When treating of fungus mela-

noides, he observes that "it has no smell, and seems more to resemble a secretion than a decomposition." M. Andral, as has been observed, asserts the same of tubercle, whilst Meckel extends the position to them all. This coincidence of opinion between inquirers of such deserved celebrity in their respective countries, deserves particular attention.]

[Viewing the matter in this way, we see at once that tubercle is not a tissue or structure; it is a product which is secreted and deposited in the interior of any texture or organ, but possesses in itself no trace of organization, nor is it analogous to any thing naturally existing in the system. Some persons wished to assign it a particular seat in one or other of the elementary textures of the body, such as the cellular tissue, the lymphatic vessels, the colourless capillaries; but it is found in all, usually in intimate contact with the tissue of the parts, but it not unfrequently appears as if surrounded by an investing membrane, derived from the condensed substance of these tissues; hence the division of tubercle, so frequently adopted, into encysted and non-encysted. This deposit occurs at all ages, but most usually in infancy and youth; it is much less frequent in advanced age, yet it may be developed from the 50th to the 60th year; it occurs even in the fœtus at birth.]

[It is usual to say that tubercle commences in the form of granulations. The rounded form, however, appears to be determined by the nidus in which it is deposited. In the air cells it is necessarily granular or globular; so it is also in cellular tissue and in mucous follicles. In the biliary ducts or bronchial tubes it becomes branched, but in other cases it is spread out upon the surface, so as to assume the form of a lamella, and in some it is literally infiltrated into the texture of the organ, and presents no definite shape or arrangement. Dr. Carswell observes that the grey semi-transparent substance which was said by Laennec to form the first stage of tubercle, does not necessarily

precede the yellow or opaque tuberculous matter, as it is not seen at any time to occur in the uterine or urinary organs, or in the mucous follicles of the intestines or biliary ducts; it is, however, frequently seen in the air cells and on the free surface of serous membranes, particularly the peritoneum, and in both these it is sometimes observed to precede the formation of opaque tuberculous matter; because, first, a number of cells of the same lobule are seen filled with the former, whilst the remaining cells contain the latter substance; secondly, because on the peritoneum the grey semi-transparent substance is generally more abundant than the pale yellow opaque matter; and, thirdly, because a small nucleus of the latter is frequently inclosed in a considerable quantity of the former. The following, to use the words of Dr. Carswell, is the explanation which "may be offered of these exceptional conditions to the regular and ordinary formation of the tuberculous matter; but first of all it is necessary to remark that the formation and manifestation of this matter, as a morbid product, cannot take place unless the fluid from which it is separated, the blood, has been previously modified. This important fact being admitted for the present, it is obvious that a healthy secreting surface may separate from the blood not only the materials of its own peculiar secretion, but also those of tuberculous matter." Such is, indeed, what takes place in the air cells. The mucous secretion of their lining membrane accumulates where it is formed, but it is not pure mucus; it contains a quantity of tuberculous matter mixed up with it, which, after a certain time, is separated, and generally appears in the form of a dull yellow opaque point, occupying the centre of the grey, semi-transparent, and sometimes inspissated mucus. In cases of tubercular peritonitis, three or four stages of diseased action are often seen; in one part some coagulable lymph recently produced; in another part the lymph advancing to organization, and forming a nidus for tubercular matter; and, perhaps, in some other points, the lymph

organized into a false membrane, within, or upon which, is placed a deposit of cheesy tubercular substance.—*See Dr. Carswell's Illustrations: first fasciculus.*]

[As to the chemical composition of tubercle, Lobstein observes that it consists of albumen, gelatine, and fibrine. It is not, however, uniform; it varies at different periods, and also in different animals. In the human subject it consists of albumen, with various proportions of gelatine and fibrine, but in the cow it contains phosphate of lime and carbonate of lime; still these products are altogether extra-vascular, and incapable of being organized.]

[Does the softening of tubercle commence at the centre, as Laennec stated? It is much more consistent with what is now known of its nature, to say that the softening commences at its circumference, for it acts as a foreign body, irritates the surrounding textures, and excites an exudation of fluid, which, being gradually infiltrated into the mass, will necessarily soften it. Hence, when, in making examinations, masses of tuberculous matter are observed to be hollow and semi-fluid towards the centre, this condition is attributable not to any change set up in the interior of the mass, but to the mode and the situation in which they are deposited. Thus, if the bronchial tubes and air vesicles be the seat of tubercle, and if a section be made of a piece of the lung so affected, the following appearances will be observed:—First, a bronchial tube will resemble a tubercle, having a soft central point, because the centre of the tube is not, and never was, occupied by tuberculous matter, and because it contains a small quantity of mucus, or other secreted fluids. Secondly, the air cells will exhibit a similar appearance, granules or rings of tuberculous matter, containing in their centre similar fluids.—*Dr. Carswell's Illustrations.*]

[*Cause of Tubercle.*—Laennec was decidedly of opinion that the production of tubercle was owing to a general disposition in the system, and was not to be attributed to inflammation, and that, whenever the inflammatory

state co-existed with the tubercle, it followed rather than preceded it. He dwelt upon the simultaneous existence of tubercles in many textures or organs of the body, as furnishing an argument against their being attributable to inflammation, for, if inflammation existed before the formation of tubercle, it is probable that some symptoms of it would be present. Bayle held a similar opinion; he considered that tubercle existed without any inflammation, that it was in its character essentially scrofulous, and was not attributable to any mode of inflammation, either acute or chronic. Hence he contended the inflammation which so frequently arises in cases of tubercular phthisis, to be an effect, or an accidental circumstance, not a cause. M. Louis holds a similar opinion; he admits that inflammation may, in some cases, exert an influence upon the development of tubercle, but in others it exerts none. Pneumonia and a tubercular deposit may co-exist in the same lung, without any necessary connexion, being in fact altogether distinct diseases. M. Gendrin conceives that tubercle has no connexion with, or dependence on inflammation, during their state of induration or crudity, and that it is during the process of softening that a new action, oftentimes of an inflammatory character, is set up in the surrounding textures. It may fairly be admitted, that the tuberculous secretion or deposit does very frequently occur in parts which are not, and have not been, the seat of acute inflammation, such as occurs in pure pneumonia in healthy habits; but, as it is a secreted product, is it not likely that there is an afflux of fluids to the part at the moment of secretion, and that the vessels are in a state of congestion, however slight it may be? Yet simple congestion or inflammation may occur over and over again without inducing the secretion of tubercle, or even leading to it, unless there is some particular tendency in the constitution of the individual, whether depending on the state of his nervous system, or of his circulating system, or both, which renders him prone to run into that mode of diseased action.]

[There are few subjects in pathology more interesting or important than the cure of tubercular phthisis. As a matter of fact, it is well known that tubercular deposits may exist in the lungs, or in the bronchi, and be evacuated, leaving a cavity, which gradually becomes obliterated, after which the individual may return to a state of perfect health: this indicates at once the curability of the disease, inasmuch as a morbid product is evacuated, a diseased mode of action set up is suspended, and is not subsequently resumed. When these results happen in individual instances, it is not unreasonable to expect that the resources of art will sooner or later effect in many, if not in the majority of cases of tubercular phthisis, that which now, in some instances, is effected by the unassisted powers of the constitution. In those cases in which the disease is suspended, and healthy action set up, the cavity which contained the tubercular matter becomes coated with a lining membrane, which is exuded upon its surface in the form of a layer of coagulable lymph, the tuberculous matter being evacuated into one of the contiguous bronchial tubes, through an opening in it resulting from inflammation and absorption, caused by the pressure to which it is subjected. The lining membrane of the tubercular cavity is at first analogous to a mucous membrane, and becomes continuous with that which lines the bronchial tube, into which the opening is made; in progress of time, however, it goes through several changes, so as to exhibit sometimes a fibrous, or even a fibro-cartilaginous consistence. Concurrently with these changes, the size of the cavity is found to diminish; its sides gradually approach, and even cohere; so that the position of the original tubercular deposit, and of the cavity which it gave rise to, is indicated merely by a narrow linear induration, with, perhaps, a puckering or dragging at that part of the surface of the lung which is next to it.]

[The morbid product called in the text "encephaloid," which means cerebriform or brain-like, is very commonly known as "fungus hæmatodes." It was so

named by Mr. Hey. Mr. Abernethy described it under the denomination "medullary sarcoma," and Mr. Burns as "spongoid inflammation." It must be obvious that all these denominations cannot apply in strictness to the same identical substance, or be drawn from the same group of characters or appearances seen in a given substance or product. The difference of names and the discrepancies of description are readily explicable when we note the progress of a few cases, and ascertain the fact that the disease runs through a series of changes in which it presents very different characters. At first it is rather firm, divided into lobules by a fine cellular tissue, and when cut appears somewhat fatty, though it contains no adipose matter. When the surface of the incision is gently scraped, an opaque milky fluid comes off on the blade of the scalpel. At a variable period from the commencement of the tumour, a change begins to occur within it, by which it becomes softer, and the previous lobulated appearance is so modified, as that if seen for the first time it would convey the impression of its being convoluted. Then it is that the term "cerebriform" is most applicable, for it has some resemblance, though not a very close one, to the pulpy condition of the cerebral substance in early infancy. Numerous blood-vessels may now be traced in different parts, lodged for the most part between the lobules. In a more advanced stage the tumour becomes so soft as to give the impression of its contents being fluid. These changes can be noted when the tumour is seated in a superficial part. The veins become turgid and convoluted, the tegument finally inflames and ulcerates, and the fluid contents, serous or sero-sanguineous, are evacuated. The ulcerating part enlarges, and from within it spongy bleeding vegetations arise. To this form, or rather stage, the terms medullary fungus, and fungus hæmatodes, are properly applicable.]

[The matter which appears to form the essential constituent of this accidental production has been analyzed

with a view to ascertain its components. It was found to consist of gelatine, albumen, and fibrine. (*Lobstein, Anatomie Pathologique*, p. 426.) Thus albumen, and a matter like fibrine or gluten, may be considered as a new product, deposited by the nutrient or secreting vessels of the textures in which it is found, and as it is altogether unlike any component which exists naturally in the textures or organs of the body, its production must be owing directly and immediately to a deranged or perverted action of the nutrient or secreting function, and in the next remove to a change in the constitution of the blood, or in the operation of the nervous agent, or perhaps in both these together. When a new product, thus compound in its own nature, is deposited in the texture of organs, its appearance, consistence, and characters, must necessarily be various even at the commencement, and as it makes progress by further deposition, its characters will present still further variations. Thus it may be deposited so uniformly in the texture of an organ, that when a section is made of it, it will resemble that presented by a piece of the udder of a cow recently boiled. To this form or variety Mr. Abernethy applied the term "mammary sarcoma;" but when in other parts, or in some other instances, he found the same product assuming the appearance and consistence of the substance of brain, he called it "medullary sarcoma," which is identical with the cerebriform or encephaloid matter of the French writers, the spongoid inflammation of Burns, the soft cancer of others: this, in its advanced stage, becomes the fungus hæmatodes of Hey and Wardrop, as above observed.]

[One of the most constant characters of this form of disease, (observes Lobstein, p. 127), is that it appears in several parts at once, and shews a tendency to reappear after extirpation; not perhaps in the part originally affected, but in other parts more or less distant from its original seat. Mr. Langstaff, Mr. Lawrence, and other pathologists, have instanced various cases of this. In one, after the removal of a tumour

from the axilla, several others soon formed in the neck and in the thigh, under the tegument. After death similar deposits were found in the lungs, liver, and even in the heart. So, after extirpation of the testis, for what Dr. Baillie called "pulpy testicle," which is owing to the same sort of change, the disease has soon after been found to reappear in the liver and lungs. Hence it is that patients survive the operation but a short time, two or three years at farthest, the disposition to the reproduction of the disease is so constant. It is remarkable that little if any pain or constitutional disturbance attends the commencement, or even the progress of these tumours, in many cases. Dr. Elliotson mentions the case of a person who had a tumour of this sort in the bladder, "which never gave him any pain, which produced no irritation to the constitution, but it bled in spite of every thing which could be done; under this hæmorrhage he sunk." Usually, however, the constitution suffers, and the patient acquires a sickly cachectic look, and grows emaciated; particularly after the softening and ulceration have taken place.]

[*Scirrhus or scirrho-cancer* is another accidental production which presents certain varieties in its appearance, in different stages of its progress, and in the different parts in which it is seated. Thus, observes Dr. Carswell, in his illustrations of Carcinoma, "it may be collected in numerous points, in the form of a hard grey semi-transparent substance, intersected by a dull white, or pale straw-coloured, fibrous or cellular tissue." The tumour thus consists of two constituents, fibrous or cellulo-fibrous threads or plates, inclosing spaces into which the new substance is secreted or deposited. In some cases it presents a lobulated appearance, resembling that of a conglomerate gland, such as the pancreas. To this form or variety Mr. Abernethy applied the term "pancreatic sarcoma:" in other instances it is diffused or infiltrated into the texture of organs, so that when cut the section looks somewhat like that of a

piece of brawn; it is "lardaceous," according to the French pathologists, who name it "*tissu lardacé*." The septa or partitions above noticed run in various directions, the softer substance, constituting the true scirrhous deposit, being inclosed between them. After some time this matter softens still more, the tumour enlarges, and if seated under the skin it is found to become adherent to it and to the subjacent parts, so as to be immoveable. The skin becomes puckered, dusky, and livid; it ulcerates, and then a cancer—open cancer, as it is often called—is formed. The edges of this sore or cancer are raised and everted, jagged and irregular. A fetid sanious discharge is established, and after a while a hard warty fungus rises up from the bottom. Here, then, are the two stages of the same disease—that of induration or scirrhus, and that of ulceration or cancer. The usual seat of this disease is in glands, the mammæ, testes, ovaries, uterus. It occurs also in the lungs, liver, pyloric orifice of the stomach, in the rectum, in the osseous structure, and in the skin. This disease most usually occurs after the middle period of life, encephaloid occurs before it; scirrho-cancer from the commencement gives rise to acute pain of a peculiar sort; "it is described as darting, shooting, lancinating." In the ulcerative stage the constitution suffers greatly; the appearance of the patient is cachectic, the skin becomes dusky yellow, every thing indicating a serious change in the state of the secretions and of the nervous system; perhaps, also, of the circulating fluids.]

[*Melanosis.*— This term was applied by Laennec to a non-analogous deposit, of a dark or dusky colour, which occurs occasionally in different textures and organs of the body. Dr. Carswell observes, that as to the forms in which it is found, they may be referred to four heads: 1st, that of minute points or dots (punctiform); 2d, in masses, whether globular or pyriform (tuberiform); 3d, of layers upon free surfaces, particularly those of serous membranes (stratiform); 4th, in the liquid state, in natural or accidental serous cavities.

When the black matter is deposited in the cellular or adipose tissue, it will appear as if encysted, from the surrounding cellular texture being compressed into the form of a membranous sac inclosing it. But "in compound tissues or organs, such as the brain, lungs, liver, or kidneys, it is perhaps never found encysted." (*Carswell.*) The size of the masses varies exceedingly, from that of a pear to the size of an orange, occasionally even still larger. The colour presents different shades, between jet black to dusky brown. The consistence mainly depends on that of the texture in which it is deposited. This matter is "opaque, and has no marked odour or taste; when exposed to air it becomes dry and pulverulent, and does not emit the odour of putrefaction until after a long period." (*Carswell.*) According to M. Barruel, it is essentially composed of the same ingredients as the colouring matter of the blood, mixed with fibrine, both however modified somewhat. Melanosis should be distinguished from that dusky change which occurs in the lungs and bronchial glands from the introduction of carbonaceous matter, and from those various dusky deposits of blood, seen in organs after death, and which are owing to stagnation of blood in particular points, and filtration; or if these spurious deposits be in the alimentary canal, they may arise from a dusky tinge given to the blood in the minute veins, or in the mucous membrane, by any acid.]

[In extirpating cancer of the lip, Dupuytren, instead of removing a triangular portion, and then uniting the cut surfaces by suture, in some cases makes a semi-lunar incision, so as to remove all the hardened part, and then covers the surface with simple dressing; after a while there is scarcely any perceptible loss of substance, as the margin of the lip rises up nearly to its natural level. This plan of proceeding is particularly applicable to cases in which the breadth of the diseased part is greater than its depth; for instance, when it extends across the whole lip. This operation is practised on the principle that cancer being an ac-

cidental production developed in the part, compresses and forces back the adjacent substance in proportion as it grows; consequently, the substance of the lip can restore itself to its original position, when, by the removal of this new growth, the compressing power is taken away. The Editors of the new edition of the "Médecine Opératoire" have given this rationale of Dupuytren's practice, (vol. iii. p. 339,) where they say that the deficiency produced by the operation is filled up, not by a new growth, but by the extension of the substance of the part;—par l'extension de la substance de l'organ. This method of operating has as yet, so far as I recollect, been adopted but in one instance in this country. The case will be found reported in one of the numbers of the Medical Repository for 1824 or 1825; it occurred in the practice of Dr. Bull, of Cork, and was attended with complete success.]

[When examining the different accidental textures here described, it is necessary to remember that they are very frequently blended together in the same organ. The following remarks by Mr. Wardrop, in his observations on Diseased Structures, place this subject in a very clear light:—

"Though it cannot be doubted that scirrhus, scrofula, and fungus hæmatodes, have each a distinct character, yet it is of importance to be aware that several of these diseased structures may exist at the same time in the same organ, or either of them may appear along with diseased changes of structure of some other kind: this led Laennec to form a class of Compound Diseased Structures. Different diseases are also seen existing at the same time in the lungs, brain, liver, and in the different coats of the intestines.

"A tumour is sometimes met with, one portion of which is scirrhous, another portion is medullary, and another is osseous or cartilaginous. It also happens that when a disease attacks an organ already changed in some parts of its structure, the one disease produces a certain influence on the other. For example, an in-

jury, as has been already noticed, often increases the growth of a scirrhous tumour, creating in it all the symptoms of simple inflammation: the common wart of the skin, from some accidental irritation, has often been known to become cancerous; one disease thus appearing either to be a complete conversion or transformation into another, or showing that two or more deviations from the natural structure may occur in the same part. So also it often happens that a syphilitic sore is accompanied by a more or less common inflammation, a circumstance necessary to be attended to in the treatment of the disease; mercury increasing such an ulcer, until the simple inflammation be previously subdued by antiphlogistic treatment.

"Sometimes compound tumours consist of a simple juxta-position of two or more different structures, and sometimes they are formed of an intimate and apparently confused mixture of the primitive tumours. Frequently some portions of each of the component primitive structures may be distinguished, but in other instances it is not easy precisely to define the primitive structure, and this is to be considered, as Laennec has justly observed, the conjectural part of pathological anatomy.

"In all tumours, it is not only difficult, but impossible, to describe the various modifications which result from the combination of scirrhus, fungus hæmatodes, and scrofula, with one another, and with other morbid alterations of structure. The characters of different tumours are drawn from cases where one disease has alone existed; for, like colours, those that are primary are easily distinguished, yet language cannot describe their various and almost infinite combinations; therefore it is only in their unmixed state that we can learn to distinguish each morbid structure: their various complications must be afterwards discriminated.

"It is not impossible that when an organ is thus affected with more than one disease, each different affection may exist in a different texture of the organ."]

DIAGNOSIS.

335. Diagnosis is the most important part of pathology, for it not only enables the physician to ascertain the nature of diseases, but also the treatment best adapted for their relief. Hitherto we have limited our attention to the study of symptoms, in order to distinguish the different phenomena which diseases present during their progress. We now proceed to assign a value to these phenomena, and appreciate them as signs whereby an observer may be enabled, in a given affection, to ascertain what organ suffers, and the nature of its derangement.

336. If diseases presented themselves always, and at every period, under the same form; if the phenomena which characterize them were not subject to infinite modifications and varieties depending on unknown causes; and if they were not complicated with those sympathies which the diseased organ has with others more or less distant from it, our diagnosis would not be enveloped in so much obscurity; for the local symptoms which result from the derangement in the function of the affected organ would be sufficient, in most cases, to resolve our doubts. Frequently, however, the principal organ of a function is materially altered, and yet the function is but slightly deranged; at other times, on the contrary, a function is consideredably disordered, while the disease has its seat in an organ which is but indirectly subservient to it. Yet, notwithstanding the numerous exceptions to this great physiological law, "that the disease of an organ manifests itself by a derangement of the function over which it presides," we still must take the state of the function into account, and consider it as the chief basis of our diagnosis. In doing so, however, we must remember to employ a greater degree of care and attention, according as the disease has been of long standing, its progress slow, and its symptoms indistinct.

337. As the following remarks are confined chiefly

o diseases of frequent occurrence, they will be directed o supply the means of distinguishing them by rational principles, rather than to attempt a degree of precision n this particular which medicine cannot as yet lay claim to: with this view we shall endeavour to determine this important problem, "*What is the organ which s affected, and what is the nature of its derangement in any particular disease?*"

338. When, together with headache more or less severe, we find a marked change in the state of the intellectual faculties—a derangement of the power of motion and sensibility, without any symptom of acute gastro-enteritis, and when these phenomena continue for any length of time, or set in suddenly, it is evident that the brain is the organ affected.

339. When the disturbance of the powers of sensation and motion occur at one side of the body, the affection of the brain is at the opposite side.

340. When paralysis with relaxation of the muscles occurs, the substance of the brain is disorganized; or, what amounts to the same thing, an effusion has taken place in its substance or on its surface.

341. If the derangement consist of paralysis, with a slight degree of rigidity in the muscles, or with convulsive attacks, and if these symptoms have been preceded by headache, and other marks of a cerebral affection, we may conclude that the brain is in a state of irritation or inflammation, which is not unfrequently produced by the contact of some extraneous substance, such as effused blood or serum.

342. When, after a violent headache, without paralysis of either side of the body, the intellects become disturbed or deranged, or when a state of complete delirium sets in, without any symptom of gastro-intestinal inflammation, the pia mater, or arachnoid membrane covering the superior parts of the brain, is inflamed.

343. When, more especially in children, a severe headache is succeeded by slight delirium, or coma co-

inciding or alternating with convulsions of both sides of the body, and spasmodic motions of the eye-balls, together with dilatation of the pupils, we may infer that the arachnoid membrane, or pia mater at the base of the middle lobe of the brain, is inflamed.

344. If an acute pain occurs in some point of the vertebral column, together with a disturbance of the function of respiration, of the power of motion and sensation in the limbs, rectum, or bladder, and if at the same time the powers of the mind are unimpaired, the derangement is seated in the medulla spinalis or its membranes; and the affection of the medulla will be found after death at the side in which the paralysis had manifested itself.

345. When the paralysis takes place in the upper extremities, and in the respiratory muscles, the derangement is seated in the cervical portion of the medulla spinalis.

346. When it occurs in the lower limbs, rectum, and bladder, the alteration of structure exists in the lumbar portion.

347. When violent pain is referred to some point of the vertebral column, and when after the pain the spine is bent backwards, its membranes are inflamed.

348. When none of the symptoms here mentioned present themselves (all of which are referable to a derangement of the functions of the brain), and when pain is felt in some part of the chest, with difficulty of respiration, cough, and expectoration, the respiratory organs are affected.

349. When the pain is referred to the larynx, and when there is an acute or hoarse cough, with a change in the character of the voice, we infer that the larynx is inflamed, particularly if by auscultation a "râle" is heard in that part.

350. If, besides these symptoms, there are fits of coughing, with extreme dyspnœa, and expectoration of pieces of false membrane, the complaint is croup.

351. We infer the existence of acute or chronic ca-

tarrh from the following symptoms:—the chest sounds clearly on percussion, the respiratory murmur is masked by a mucous "râle," the expectoration consists of sputa, which may be transparent or opaque, viscid or puriform, colourless or of a greenish yellow.

352. When, in addition to these symptoms, there is a considerable degree of dyspnœa, congestion of the face, and considerable quickness of the pulse, without any symptom of disease of the heart, the catarrh is seated in the last ramifications of the bronchi.

353. When the sputa are round and opaque, with white striæ, and when pectoriloquy is heard in some part of the chest, it indicates the existence of phthisis with a cavity in the lung.

354. When the sound emitted by the chest is dull, when the sputa are viscid and streaked with blood, at the same time that the respiration is incomplete and accompanied by a "râle crepitant," the lung is inflamed, no matter whether pain is felt in the part or not.

355. If the pain is acute, and the respiration imperceptible by the stethoscope, at the same time that the voice determines an œgophony, the disease is pleuritis.

356. When the sound of the chest on percussion is more loud than natural at one side, the respiration being completely suspended in that part, it indicates pneumo-thorax.

357. When the respiration is laborious, without any other symptom of an affection of the lungs, and when there is, at the same time, an irregularity in the action of the heart, we conclude that this latter is the organ which is affected.

358. When the stroke of the heart is weak, and gives a clear sound, which is audible in several parts of the chest, its cavity is dilated, and its walls thin. If these phenomena are perceptible at the base of the sternum, the dilatation is seated in the cavities of the right side; if at the cartilages of the ribs, it indicates that the left cavities are dilated.

359. When the stroke of the heart is strong and circumscribed, and when a dull sound is emitted by percussion at the region of the heart, there is a hypertrophy of that organ, the situation of which (whether in the right or left cavities) will be determined according as the phenomena are most perceptible at the base of the sternum or on the cartilages of the ribs.

360. When the "bruit de rape," or sound like that of a file, is heard at the left side, simultaneously with the contraction of the ventricle and the stroke of the pulse, it indicates that the mitral valves, or the sigmoid valves of the aorta, are indurated; but if this sound is heard at the base of the sternum, the alteration of structure is situated in the tricuspid valves or in the sigmoid, which are placed at the origin of the pulmonary artery.

361. When the abdomen is painful on pressure at some point, and when the functions of some of the viscera contained in this cavity are deranged, the disease must be looked for in one of its regions.

362. The digestive apparatus is deranged when there is vomiting or purging, or when the tongue is loaded and the digestion impaired.

363. If the tongue is red, and its point dry; if there is pain in the epigastrium, with vomiting, loathing of food, and fever, the mucous membrane of the stomach is inflamed.

364. If to these symptoms there is added a diarrhœa, with pain in the umbilical or iliac region, particularly of the right side, the inflammation extends to the intestines.

365. When, in addition to these phenomena, the tongue, lips, and teeth, are covered with a dark coating, the intellects disturbed, and the patient lies in a state of stupor, the gastro-enteritis has reached an extreme degree.

366. When the tongue is white and broad, when there are colic pains, with flatus, diarrhœa, and acute pain in either of the loins, extending along the course of the colon, the large intestines are inflamed.

367. If the abdomen is hard and contracted, with obstinate constipation, and occasionally vomiting, and if there be violent colic pains, particularly at the umbilicus, which, so far from being increased by pressure, are often relieved by it, and if the pulse be not increased in frequency, the disease is *colica pictonum*.

368. When the abdomen is tumid, and excessively sensitive to pressure, either at some point or in its entire extent, and if the pulse is small, contracted, and febrile, the tongue white and humid, and the countenance anxious, the peritoneum is inflamed: in some cases there is vomiting, in others not.

369. When the digestion is painful and difficult, and is attended with flatus and vomiting, and when a hard irregular tumour is felt in the epigastrium, there is a scirrhus, or cancer in the stomach.

370. When a dull pain is felt in the right hypochondrium, and when pressure on that part produces pain, the stools being suppressed, or of a grey colour, the skin and mucous surfaces presenting a yellow tinge, the urine turbid or saffron-coloured, the liver is inflamed: in such cases the patient usually rests on the affected side.

371. We shall not extend these general remarks farther: sufficient, we trust, has been said to point out the way in which the young observer should proceed to ascertain, by a strict analysis,—1st, the cavity in which the diseased organ is situated; 2d, the organ itself; 3d, the manner in which it is affected. For further details the reader is referred to the Second Part of the work.

SECOND PART.

DIAGNOSIS AND PATHOLOGY

OF

DISEASES OF THE BRAIN

AND

ITS MEMBRANES.

[When reading the following sections, which treat of Diseases of the Brain and of its Membranes, the student will do well to refer, from time to time, to the general remarks on the course of examinations recommended to be pursued when investigating such affections. They will be found from Section 63 to 100. In these, most of the indications are given which point to the existence of deranged action in the cerebral organs. The approach of these affections is often insidious, being masked under the form of diseases of other organs. Sometimes they come on suddenly, the premonitory indications being overlooked, or so slight as to be inappreciable. Hence the obvious necessity of a diligent scrutiny, such as that recommended in the sections above referred to. Serious affections of the brain are well known to arise during the course of other diseases.

In such cases they are secondary or superinduced; in others, they are symptomatic of affections of distant organs, such as the stomach and liver; often they are primary or idiopathic. The diseases in the course of which cerebral affections are most frequently superinduced, are continued fever, scarlatina, gastric fever in children, measles, hooping-cough, pneumonia, and diseases of the kidneys. Hence, observes Dr. Abercrombie, it may be useful to keep in mind those symptoms which, in the course of any disease, indicate a tendency to affections of the brain. They are the following:—

In the Head—Sense of weight and fulness, throbbing, giddiness, head-ache, tingling in the ears; propensity to sleep, stupor. In many obscure and insidious cases, a constant feeling of giddiness is the only symptom.

As referable to the *state of the mind*, there may be a confusion of thought, forgetfulness on particular subjects, transient fits of incoherence, or high excitement and delirium.

In the Eye—Impatience of light, contraction or dilatation of the pupil, squinting, double vision, distortion of the eyes, paralysis of the muscles of the lids, producing the shut or the gaping eye; transient attacks of blindness, or double vision; objects seen that do not exist; a long-sighted person suddenly recovering ordinary vision.

In the Ear—Great noise heard, unusual acuteness of hearing, tingling (tinnitus), transient attacks of deafness.

In the Speech—Indistinct or difficult articulation; unusual slowness or quickness of utterance.

In the Pulse—Remarkable variations in frequency.

In the Muscles—Rigid contraction of particular parts, as the side of the face, or one of the limbs; convulsive or paralytic affections.

In the secreting function, particularly of the Urine—There frequently occurs a remarkable diminution of the secretion, sometimes amounting nearly to suppression

of it. This is accompanied by a constant desire to pass urine, occasioned, probably, by its increasing acrimony as the quantity decreases.]

[However important it may be to enumerate symptoms, it is of much more importance to weigh them well, in order to ascertain their correspondence, and whether they all point to an affection of one organ, or of two or more. And then it is of essential consequence to trace back carefully the history of the rise and progress of each case, in order to determine which organ was first affected, and which secondarily.]

[One of the older physicians well said, "Perpendendæ sunt observationes non enumerandæ." In reference to the point here noticed, we may say, "Perpendenda sunt symptomata non enumeranda," or rather, "Potius quam enumeranda." Thus the peculiar oppression which accompanies a high degree of fever is not accounted an unfavourable symptom; but the like degree of oppression, with slight fever, would indicate an affection of the head of a very serious character. "In the same way, a degree of head-ache and delirium, which, when accompanying a high degree of fever, would be considered symptomatic, would indicate a dangerous affection of the brain if accompanying slight fever."]—ABERCROMBIE.

As to the seat of inflammatory affections within the head, they may occur in the membranes, or in the cerebral substance, the extent and degree of the inflammation in each case being various. In the former editions of this work I followed the original of M. Martinet, and gave fungus of the dura mater and encephalocele as distinct diseases; the former of the membrane, the latter of the brain. But as they are consequences, the one of increased vascular action in the dura mater, the other in the brain, I shall here bring them into the sections which treat of the primary affections.

The *Causes* of cerebral inflammation are, concussions, blows, or fractures; imprudent exposure to the direct action of the sun's rays, violent fits of passion; gloomy

rooding over real or fancied ills; intemperance; protracted study; improper use of narcotics or stimulants. They may occur in consequence of suppressed evacuation, or supervene upon inflammation of the ear, or disorder of the stomach and chylopoietic viscera, or upon the retrocession of the eruption in exanthematous fevers.

INFLAMMATION OF THE DURA MATER.

372. *Symptoms.*—This inflammation rarely occurs except as a consequence of severe contusions of the skull, or wounds, with loss of substance, of its bony arch. It gives rise to violent head-ache, and is often complicated with arachnitis, encephalitis, or with effusions of blood: hence, during their progress, the greater number of cases are accompanied by paralysis, which, when it does occur, is preceded by rigors, rather than by delirium, or any spasmodic affection. This paralysis is observed usually on the side opposite to that which is the seat of the contusion, and is more or less partial according as the effusion covers a greater or less extent of surface. In cases of fracture of the skull, when there is a perceptible interval between the bones, pus will flow out, and if there be a loss of substance sufficient to expose the dura mater, it is easy to ascertain its inflammation by the cellular and vascular masses developed on its surface, and by the pus which flows from them.

373. *The diseases with which it may be confounded* are, arachnitis, effusions of blood consequent on external injuries, fungous tumors of the dura mater during their first stage, and also that of some cancerous affections of the brain.

374. *Anatomical Characters.*—The membrane presents a degree of redness, more or less intense, together with some vascular masses developed on its surface, which sometimes unite with similar productions on the bones and inflamed integuments, and in some instances pass into the state of cartilage or bone; the membrane also

becomes thickened, and occasionally exfoliates; pus is effused on its surface, particularly towards the lateral parts, where it becomes accumulated.

[Primary or idiopathic inflammation of the dura mater is a rare affection: Dr. Abercrombie is enabled, even from his extensive experience, to cite but one distinctly marked case of it.

A lady, aged 22, was suddenly seized with severe pain in the left temple; the next morning Dr. A. saw her, and found the pulse 100, the tongue white and moist, the pain in the temple continued, but was not severe; her state resembled that of mild continued fever, attended by some indications of an affection of the brain. She was much relieved by general and topical bleeding, with purgatives; still some pain existed at times, and some feeling of confusion, and the seat of the pain, when present, varied from the temple to the upper part of the head. During a week she continued thus, with little else than the symptoms of fever; in the second week a swelling appeared in the left upper eye-lid; her look then became somewhat oppressed; soon after she had severe shiverings, for which an eminent physician "ordered the bark in large doses." For two days she seemed better; the swelling in the eye-lid was punctured, and discharged a good deal of purulent matter; it was then ascertained, by passing a probe back, that the bone along the roof of the orbit was denuded. In the evening of the eighth day from the first attack she had a slight convulsion; on the ninth complained of headache, looked oppressed, pulse sometimes rapid, at others nearly natural: on the morning of the tenth day she complained of pain over the crown of the head; a few hours after this she became incoherent; sunk into a low state; did not speak, though seeming quite sensible; and died in a calm state.

Inspection.—On raising the skull-cap, a quantity of purulent matter escaped, which was lodged between the dura mater and the bone: the area of this space was about that of a crown piece. It was circumscribed by a

layer of false membrane, which connected the dura mater to the bone: it was seated in the anterior part of the "right hemisphere." The dura mater at this part was in some points thickened, in others rather thin; its surface was rough and irregular. The right hemisphere of the brain, to a considerable extent, was covered by a layer of thick purulent matter: when this was removed, a layer of false membrane was found under the arachnoid; the pia mater between the convolutions was highly vascular; the cerebral substance was, to a slight depth, of a dark livid colour, but without any change of structure.

The pain, it will be observed, was generally referred to the left temple, but it was not constant; it sometimes was said to move up to the top of the head. The swelling occurred in the left eye-lid, yet the diseased appearances are found in the anterior part of the right hemisphere. This circumstance does not appear to have attracted notice in the drawing up of the case.

Of the other cases of this insidious affection given in the work just quoted, some commenced with pain of the ear, or supervened upon the suppression of the discharge of matter from the ear, such as often follows scarlatina. The pain in the ear continues for some time, with varying degrees of intensity; the patient becomes restless and irritable, the pulse is very variable, sometimes quick, sometimes slow, languor and drowsiness set in, and then coma.]

FUNGUS OF THE DURA MATER.

375. *Symptoms.*— This disease is of rare occurrence, but is not confined to any particular period of life. It may sometimes exist without occasioning any derangement of function, or if it manifests any symptoms they are so obscure as scarcely to indicate its existence. But after some time, probably during the progress of an old syphilitic taint, or in consequence of a contusion of the head, violent headaches occur, which may be either dull or lancinating, continued or intermittent, and occasion-

ally accompanied by epileptic, comatose, or paralytic symptoms; at length a tumour begins to appear, the seat of which may be either at the roof or base of the brain, or sometimes in the orbit. This production is more or less hard, indolent, or very painful, increases rather slowly, and exhibits a sort of pulsatory motion. It may at times be reduced altogether, or in part, within the walls of the cranium, and then we can distinctly trace the margins of the aperture through which it had escaped, which we find to be rough and irregular. Pressure, directed from above downwards on the tumour, gives rise to paralytic or comatose symptoms, for by this means it is made to compress the brain; but if we press it from side to side between the fingers, no particular effect is produced, or at most only a slight degree of pain, for then no impression is made on the substance of the brain. Sometimes the cerebral symptoms cease altogether after the tumour has escaped beyond the cranium.

[Encephalocele is synonymous with hernia cerebri: it occurs in young children before the process of ossification has completed the sutures of the head, or in adults when part of the cranial bones are destroyed by injuries, or removed by the trephine. But imperfection of the sutures in the young, or the removal of pieces of bone in persons of advanced years, do not necessarily, nor even in the majority of cases, lead to the formation of such protrusions. They result immediately from increased vascular action set up within the brain; and they increase as it proceeds. Hence the operations resorted to are calculated rather to increase than diminish the evil.]

376. *The diseases with which it may be confounded.*—This affection may, in its first stage, be confounded with any of the derangements of the brain or its investments; in the second, with encephalocele—with vascular tumours of the dura mater, following wounds—with abscess—with certain wens, or with aneurism of the occipital or temporal arteries.

. 377. *Anatomical Characters.* — These tumours are brous in their texture, sometimes crossed by enlarged lood-vessels; in some poiuts they become softened and roken down, and contain blood effused into their subtance. In some instances we find only one of them, 1 others several, which may be encysted, circumscribed, nd more or less irregular. At first they are flattened efore they escape beyond the skull, afterwards assume he form of a mushroom, the pedicle corresponding to he aperture in the cranium. The margins of the opening re eroded, and in many cases present asperities, hich, by pressing against the tumours, excite intenso ain.

ARACHNITIS.

[The term arachnitis is used to denote inflammation of the arachnoid membrane; but this usually coexists with inflammation of the pia mater, or such a state of its vessels, that in practice it is difficult, if not impossible, to separate the consideration of the one from that of the other. It is from this circumstance that both are frequently included under the term meningitis, and sometimes paraphrenitis. It is the *cephalitis meningica* of Dr. Good.]

378. The characteristic symptoms of arachnitis vary according as it is seated on the convexity of the brain, at its base, in the ventricles, or according as it is acute or chronic; hence it is necessary to consider each of these cases separately. This occurs most commonly in persons from the age of fifteen to forty years: its causes may be divided into those which act directly on the head, such as contusions, insolation, burns, erysipelas of the scalp, and those which predispose to inflammation, such as suppression of sanguineous discharges, abuse of spirituous liquors, co-existence of inflammations of the other serous membranes. It begins with headache, the seat of which is variable; it soon becomes violent, the temperature of the head being at the same time very much increased, the face

suffused, and the conjunctiva of the eyes injected. Vomiting sometimes occurs at this period, either spontaneously or excited by drinking; we do not, however, observe any other symptom of gastritis. There is much restlessness and agitation, the sensibility of the eye is much increased, the mode of pronunciation is altered, the expressions are short, memory deceptive, movements hurried, with general fever. After some time the headache is succeeded by delirium, which is connected with this state of general re-action of the system: the delirium, however, is not constant; it ceases occasionally when the headache recurs, is attended with irregular though still voluntary movements, gives to the countenance an appearance of dulness and stupor, such as occurs in intoxication, or determines a general diminution of the sensibility. Finally, the arachnitis passes into its third stage, which is marked by immobility of the pupils, suspension more or less complete of the mental faculties, as well as of the general sensibility; in a word, by those symptoms which indicate a change from a state of disordered intellect to that of entire destruction of it. This state of coma is usually joined with trismus, or (though less frequently) with subsultus tendinum of one or other of the arms: in other instances we find a rigidity of the muscles, with or without convulsions, which may attack both sides of the body, but more frequently the upper extremities. These different symptoms are succeeded by a state of general relaxation, which immediately precedes death. Inflammation of the arachnoid seems in some cases to commence with one of the latter stages, without having exhibited any of the symptoms of the first.

379. When arachnitis is caused by a contusion, it may be followed by a paralysis of one side of the body. The hemiplegia, however, does not occur before some days have passed, as it is always gradual in its approach, being preceded by delirium, and the other symptoms above enumerated.

380. In lymphatic subjects, and in those who are

weak and not capable of much re-action, disturbed dreams may occur instead of the delirium, and a state of general prostration may become the chief character of the disease. In such cases also the coma is more sudden in its occurrence, and the stupor is more decided, though the cerebral and febrile symptoms are in general less strongly marked.

381. *Symptoms of Arachnitis of the Ventricles and base of the Brain.*—This inflammation is considered as peculiar to infancy; but if it does occasionally occur in adults, it is found connected with that of the convexity of the brain. It is marked by headache, generally confined to the forehead and temples, which is accompanied by fever, depression, and general languor; sometimes by spontaneous vomiting, and somnolence more or less constant, without any disturbance of the intellect. These phenomena are usually succeeded on a sudden by a complete loss of the general sensibility, of the intellectual functions and senses, together with spasm of both sides of the body, which may be either continued or recurring in fits of variable duration, and manifested chiefly in the eyes, mouth, and upper extremities. We also sometimes have occasion to observe the head drawn backwards, which indicates that the part of the arachnoid which covers the pons Varolii is engaged in the inflammation. In some cases, during the progress of this inflammation, remarkable remissions occur, but are speedily succeeded by new convulsive and comatose symptoms, until at length the comatose state becomes fixed and constant, accompanied by a complete relaxation of the limbs, together with, in general, a remarkable slowness of the pulse. In this latter period the pupils of the eyes are considerably dilated.

382. In adults, languor and somnolence occur in place of the spasmodic symptoms manifested in children; there is also a greater or less degree of weakness and inactivity of mind, but no delirium; the patient replies correctly to questions put to him, and may speak rationally when roused; but after some time coma and

relaxation of the limbs go on increasing, until the fatal termination of the disease takes place.

383. *Symptoms of Chronic Arachnitis.*—Sanguineous congestions, either continued or frequently repeated, precede and accompany this affection; its progress is essentially slow; its symptoms at the commencement are not strongly marked; they all, however, partake somewhat of the character of those already detailed in the previous section. At first the power of articulation is somewhat impeded, and when the inflammation begins with the arachnoid of the convexity of the brain, which usually is the case, the ideas are somewhat incoherent, the gait vacillating, and the limbs agitated by continued tremblings; the disturbance of the intellect, though slight at first, makes a slow but constant progress, until at length it ends in absolute maniacal delirium. According to Bayle, who first described this form of arachnitis, the chief characters of the delirium which accompanies it are, a "heightening and exaggeration of all the ideas, particularly those of ambition." After some time this state of phrensy gradually subsides into one of fixed mental alienation; the power of articulation is impeded or totally lost; and finally, idiotcy and general paralysis occur during the last stage of the disease, which still may last several years, during which the organic functions, such as digestion, respiration, and circulation, may be regularly performed, though the paralytic symptoms, and the derangement of intellect, go on progressively increasing. In some cases we observe, towards the close, spasms, accompanied by total loss of intelligence; these may be continued or periodical, or they may recur at irregular intervals.

384. We cannot conclude this description of arachnitis without remarking, that when it happens to be complicated with inflammation of the thoracic or abdominal viscera, the cerebral affection is rendered much more obscure, and therefore requires a more careful examination, in order to ascertain its existence.

385. *The diseases with which it may be confounded.*—

Some other affections may be confounded with inflammation of the arachnoid membrane: thus permanent congestions of the pia mater, encephalitis, and ataxic or nervous fever, may be mistaken for arachnitis of the convexity of the brain; dropsy of the ventricles, "ramollissement," or softening of the hemispheres of the corpus callosum or cerebellum, and adynamic or putrid fever, may be mistaken for that of the base; and finally, hydrocephalus, and several chronic alterations of the brain, may be mistaken for chronic arachnitis.

386. *Anatomical Characters.*—The different regions of the arachnoid membrane do not seem equally susceptible of inflammation. The following appears to be the order of its frequency in them: on the convexity of the hemispheres, at the decussation of the optic nerves, in the interior of the ventricles, at the pons Varolii; and lastly, on the internal flat surfaces of the hemispheres. When the arachnitis has lasted only a few days, and has been slight, the membrane presents no perceptible change; it remains as thin and transparent as in the natural state, and cannot be detached from the convolutions without being torn, and therefore cannot be separated without the greatest difficulty from the pia mater. The redness and increased consistence which it appears to possess in this stage belong altogether to this latter membrane, whose cellular tissue is thickened, and vessels considerably injected. At a more advanced period of the affection the arachnoid acquires a real increase both of thickness and density; it loses its transparency, and presents somewhat of a milky appearance. These different states are marked in proportion to the duration and intensity of the inflammation; still the thickening is never so great, nor is the change so decided, as to give to the arachnoid the appearance of the pleura; it may, however, be easily detached from the pia mater, in fragments of sufficient extent to point out its change of structure, and show that this increase of thickness is not owing to the cellular filaments that adhere to it. The

pia mater is in such instances injected; the cellular tissue under the arachnoid, and that which connects the different vessels, are injected with a serous or albuminous fluid, so intimately combined with them, as to give them the appearance of a single membrane, thick and whitish, from which, by pressure, a sero-purulent fluid may be made to exude. These characters are presented by the pia mater in a greater or less extent on the brain, particularly towards the superior part of the hemispheres. In parts where the sub-arachnoid tissue is rather loose and abundant, for instance between the convolutions, in the fissure of Silvius, and more particularly opposite the pons Varolii and decussation of the optic nerves, this serous liquid, by being infiltered into the meshes of the tissue, gives it the appearance of a gelatinous fluid diffused on the surface of the brain. Sometimes under the arachnoid there is a layer of pus, particularly when the inflammation has been determined by a contusion of the head; more commonly, instead of pus, is found a serous or sero-sanguineous fluid. In some cases the arachnoid is covered with false membranes, more or less thick, and more or less extensive; but it is rare to find adhesions between the two layers of the membrane, and still more rare to find the inflammation confined to its cranial layer; when, however, it does occur, it requires care to determine whether the redness is seated in the serous membrane, or depends on the injection of the pia mater; adhesions of the pia mater to the substance of the brain are, on the contrary, very common. Finally, the arachnoid, particularly that of the ventricles, may lose its polished appearance, become rough, and covered with small granulations, which, when very minute, make it appear as if covered with down; they, however, can be distinguished when examined in a clear light. When these granulations are seated on the upper part of the hemispheres, care should be taken not to mistake them for the glandulæ Pacchioni, which are always larger, whiter, more numerous, and in closer contact. A similar mistake may be caused

y the presence of air-bubbles beneath the pia mater, but his is easily removed by detaching the membrane from he surface of the brain. The arachnoid and pia mater nay be both altogether destroyed by inflammation extending to the substance of the brain. In other instances, ve find in the substance of the membrane small white amellæ, thicker at their centre than towards their circumference, at first sight resembling a soapy fluid diffused on the surface: but on closer examination they are found to approach very much to the consistence and structure of cartilage.

To conclude, we frequently find in the ventricles serous, sero-sanguinolent, or sero-purulent effusions, which are more abundant as the inflammation approaches the base of the brain, or occurs in the ventricles themselves. In such cases, more especially in children, the portion of the brain that forms the walls of the lateral ventricles is softened to a greater or less extent; this is particularly observable in the digital cavity, fornix, and corpus callosum. This softening may be so great as to reduce the parts to a semi-fluid state, in which the cerebral substance presents a dull whitish colour, without any appearance of sanguineous injection.

[The following case of simple meningitis, or inflammation of the arachnoid and pia mater, will illustrate the more marked characters of the affection better than any general description. See *Abercrombie on Diseases of the Brain*, p. 52.—A boy, aged eleven, had been for about a fortnight remarkably listless and inactive, and affected with frequent vomiting; his bowels were costive, but he did not complain of any pain; he was free from fever. He was then, at the interval of a fortnight from this first illness, seized with violent convulsions, which occurred several times; in the intervals he had vomiting and headache, and sometimes said he could not see: pulse 60. On the 15th day the convulsion ceased, and left him in a state of profound coma. This continued until the 16th, when it lessened after the purgation, and in the evening of that day he be-

came quite sensible: still he complained of headache: pulse 120. 17th day—the ordinary remedies having been adopted he was much relieved; no headache, no vomiting; tongue moist, pulse 120. 18th—pulse 108, no complaint; much disposed to sleep, pupils rather dilated. 19th—pulse 112; appearance much improved; eye natural, tongue clean; bowels open; no unusual drowsiness. 20th—pulse 108; functions natural; he was much disposed to sleep. 21st—pulse 70: had an attack of vomiting, and complained much of his head; afterwards fell into a degree of stupor: was sensible when roused, but was impatient of being disturbed, and still complained of his head; eyes natural; repeated vomiting. 22nd—perfect coma, with frequent convulsion; pulse 120 to 160; he frequently lay with one hand pressing his forehead, and the other the occiput. 23rd—in profound coma the whole day, and died during the night.

Inspection.—On raising the dura mater the surface of the brain had, in several places, a yellow appearance, owing to a deposit of false membrane under the arachnoid. It was as thick as a wafer, and masses of it lay between the convulutions, and also between the hemispheres, which it glued together. It covered the anterior part of both hemispheres, the whole base of the brain, and also much of the cerebellum. On the posterior part of the brain it did not exist, and there the pia mater was evidently inflamed, and so was the surface of the brain in the same part. There was no effusion in the ventricles.]

[It is frequently said that the spasmodic twitchings and convulsions which occur in these affections are owing to inflammation of the arachnoid membrane. They cannot, however, be the direct and immediate effect of inflammation in a mere membrane, which has no functional or organic connexion with the muscular system. Some part of the cerebral substance, particularly its surface, must be brought into an irritable state before the convulsions can occur. It should be recol-

lected that the surface of the brain, the pia mater, and the arachnoid, are all three supplied by the same vessels. Irritation or inflammatory action may commence in either, but it soon reaches the others, just as in the pulmonary organ inflammation may begin at the surface of the lungs, and extend to the pleura, constituting a mixed affection, which is not unfrequently named "pneumo-pleurisy," so as to express this fact and also the order in which the parts became affected; or it may commence in the pleura and extend to the lung, and so merit the name "pleuro-pneumony."]

[There is an insidious and dangerous modification of meningitis which occasionally occurs in delicate irritable females, more particularly in those who suffer mental disquiet, in whom it simulates hysteria or even mania; it occurs also in males who are addicted to intemperance. But Dr. Abercrombie saw it in a gentleman of middle age, stout make, and temperate habits. "It commences sometimes with depression of spirits, which after a while passes off, and is at once succeeded by unusual cheerfulness, which is followed by maniacal excitement." In some cases the disease creeps on unnoticed until it assumes a rather compound form, characterised by a hurried manner, rapid incessant talking, rambling from one subject to another, with obstinate watchfulness and quick small pulse. The affection frequently passes soon into convulsion and coma, but becomes often fatal by the rapid sinking of the vital powers supervening upon high excitement.—*Abercrombie*, p. 64. The principal morbid appearance is a highly vascular state of the pia mater, with, in some instances, slight effusion between it and the arachnoid. In some cases of this sort Dr. A. found that no good was produced by topical bleeding, laxatives, cold applications to the head. Hence he was induced to try the effect of stimulants, cautiously given. He found the plan successful. He limits the practice to "those cases in which the excitement is accompanied by a small rapid pulse, and an expression of paleness and

exhaustion." The symptoms and pathological characters of this affection are, in many particulars, analogous to those of delirium tremens.]

[Of the modification of meningitis here noticed, I saw an instance a few years ago, having been requested to make the post-mortem examination by the gentleman who attended the case. The patient was thought at one time to labour under continued fever; at another, her ailment was attributed to irritation of the stomach and bowels. The liver was also said to be affected, and mercury was prescribed. In short, it appeared a Protean malady during its progress, but towards its close it was confined to the head. The person here referred to was a young female, aged nineteen or twenty. For some months previously to her death she appeared to her friends to be inattentive, absent, and at times her thoughts wandered, so that she seemed silly or even incoherent. It was known to her friends that she had suffered a very distressing disapointment, but as she did not evince much sensibility at the time, it was not supposed to have laid the foundation of her ill health. A short time previous to her death one of her eyes was observed to be so much protruded, that it led to suspicion of there being a tumour or an abscess in the orbit, but there was neither pain, heat, or inflammation, in that situation. On opening the head, the dura mater and arachnoid were perfectly healthy; but the vessels of the pia mater were turgid with blood over the front and sides of the hemispheres; most of the vessels appeared to me to be double their ordinary size. Wishing to see the condition of the tubercula quadrigemina, I raised and removed the back part of the hemispheres, and found the vascularity there increased; and on exposing the thalamus opticus, particularly at the right side, its surface was softened and diffluent, and this extended backwards in a slighter degree to the tubercula (the upper pair), but no further. There was no fluid under the arachnoid upon the hemispheres, and not more than a drachm or two in the ventricles. There was no

change of structure or new product of any kind in the orbit.]

[An instructive case of this affection, I mean of the vascular pia mater, (at least I infer it to be such, though there was no inspection, as the case ended favourably), is given in the Medical Gazette, vol. ix. p. 421-2. The subject of it was a delicate female, long the subject of chlorosis, and who having got acute pneumonia was bled largely and frequently. When becoming convalescent she suffered some mental disquiet, after which, she became nervous, giddy, forgetful, and soon after passed into a state resembling maniac al excitement. The remedial means used were opiates, cold to the head, and mild aperients, and with good effect; further bleeding would have been destructive.]

ACUTE HYDROCEPHALUS.

387. *Symptoms.*—Headache, confined to the forehead or temples, increasing gradually, and occurring during the first septenary period of life, most usually during the process of dentition; frequent vomiting; slowness in movement, which is made with reluctance; restlessness, discomfort, irritability of the retina, with, in general, contraction, and immobility of the pupils; inclination to drowsiness, together with sudden startings, sleep incomplete while it lasts, sometimes gnashing of the teeth. After some time the headache is no longer complained of, or the child manifests it only by acute cries, or by carrying its hands as if instinctively towards its head. The drowsiness increases in degree, the patient lies on the back, sensibility gradually diminishes, the coma is interrupted by momentary convulsions, most usually manifested in the eyes, mouth, and upper extremities; sometimes there is a permanent strabismus, or a turning of the eye upwards; the pupils become dilated and immoveable, or, in some cases, agitated by constant oscillations; the pulse becomes slow and irregular; the bowels are in general constipated. It is about this period that we begin to perceive remissions of the principal symptoms, which disappear more or less

completely; during these intervals the patient recovers his understanding, and complains only of headache. If death does not occur during the comato-convulsive period, a state of collapse succeeds the latter, the pupils become more and more dilated, the extremities are in a state of general insensibility and relaxation, the pulse resumes its frequency, the skin becomes cold and covered with perspiration, the respiration is irregular, and death terminates this state, which occasionally lasts for some days.

388. *The diseases with which it may be confounded* are, arachnitis of the base of the middle lobes, softening of the walls of the lateral ventricles, and worms in the intestinal canal.

389. *Anatomical Characters.*—The arachnoid membrane lining the lateral ventricles and base of the brain presents no alteration; on the convexity it is rather dry; the superior convolutions of the hemispheres are depressed and flattened, and when touched give a sense of fluctuation; the lateral ventricles, considerably dilated, are filled with a limpid straw-coloured fluid, without any flocculi; the dilatation is most manifest towards the digital cavity; the third and fourth ventricles contain but little fluid; the foramen of communication between the lateral ventricles is considerably enlarged.—Sometimes no fluid is found in the ventricles, though dilated, which arises from the fluid being absorbed immediately before death had occurred. The pia mater, enveloping the external surface of the brain, may be injected with blood; but this is not a very frequent occurrence, and should not in any case be considered as the cause of the effusion into the ventricles. Finally, when the disease has lasted for a considerable time, the digital cavity, the fornix, and corpus callosum, may become softened, in the same way as has been described when treating of arachnitis of the ventricles.

CHRONIC HYDROCEPHALUS.

390. *Symptoms.*—This disease is most usually constitutional, and then distinguishable by an excessive in-

crease of the size of the head, separation of the sutures, transparence of the fontanelles, with fluctuation, perceptible by pressure. The activity of the senses and understanding is considerably diminished, or altogether lost; the movements are weak and feeble to the last degree; convulsions sometimes take place; the patient has not sufficient strength to support his head, it therefore droops constantly on the shoulders or chest. In some cases the head retains its natural dimensions, but we can then observe near the occiput a fluctuating tumour, surrounded by the investments of the brain, by pressing on which, we can make the fluid compress the brain, and cause comatose or convulsive symptoms. If the hydrocephalus occurs after the child has attained its first year, it can be distinguished by the gradual weakening of the sensitive and locomotive powers in proportion as the head increases in size; the headache becomes gradually less intense as the disease advances.

391. *The diseases with which it may be confounded.*—When congenital it may be mistaken for encephalocele in adults; for some of the chronic alterations of the brain, or for hydatids, which sometimes give rise to it.

392. *Anatomical Characters.*—Separation of the sutures, incomplete ossification of the bones, in some of which the bony matter is altogether wanting; effusion of a citron-coloured serous fluid, in greater or less abundance. When the disease has lasted for some years, the fontanelles are occupied by a fibrous substance, and the bones become thin and considerably increased in breadth. If the effusion has taken place on the surface of the brain, then this organ, reduced to a very small size, is compressed towards the base of the skull; if, on the contrary, the effusion occupies the lateral ventricles, then the hemispheres of the brain are expanded into a vast membranous pouch, the external surface of which is closely applied to the investing membranes.

[Hydrocephalus, or water in the brain, is evidently a result of increased action in the vessels which ramify beneath, or in the lining membrane of the ventricles;

it is generally said that the comatose state which so often occurs in the advanced stage of these affections is owing to the pressure of the effused fluid, as if it prevented the due distribution of what, in modern phrase is termed the nervous agent, or what the ancients called the animal spirits; the squinting and double vision, dilated pupil, and the paralytic state, are attributed to the same agency, but all may exist where there is no fluid effused: many cases have occurred, which presented during their progress unequivocal symptoms of this form of diseased action, and which would be set down as cases of hydrocephalus by even the best pathologists, but yet they exhibited no traces of effusion after death. There are two stages in this affection, the acute and the chronic, or rather, in some instances it runs its course rapidly, in others it is slow in its progress; moreover, the structure in which it commences, or is seated, is not in all cases the same: in some, it attacks the lining membrane of the ventricles, in others the white substance forming the fornix, septum lucidum, corpus callosum, or some of the parts in the floor of the ventricles. Hence we see the propriety of calling it, with Mason Good, cephalitis profunda, when it attacks the cerebral substance, or cephalitis meningica, when seated in the membrane; but as the vessels which here supply the lining membrane and the cerebral substance are the same, one cannot be affected without some irritative action being extended to the other: the serous effusion doubtless is a result of the inflammation of the membrane, but the startings, convulsions, distortion of the eyes, and the paralysis, follow upon the affection of the cerebral substance itself. This disease usually occurs in children from early infancy up to the seventh year, particularly in those of delicate frame and scrofulous constitution: occasionally it has been met with in persons from 12 to 20 years old, and in a few instances at a still later period, from 30 to 39; it commences insidiously, the young patient being perhaps somewhat restless and feverish, which is attributed to teething, or to

worms, particularly as the bowels are usually irregular. Golis (*Essay on Hydrocephalus, translated by Dr. Gooch*) notices expressly the listlessness and impaticnce, the knitting of the brows, which so often occur at the early stage, and the heaviness of the head, which the patient seeks to rest on its nurse's breast or any other object which can give it support; then the pain of the head shooting from temple to temple, or across the forehead, which is usually accompanied by vomiting. If the child attempts to walk, he totters, so unsteady is his step. Sleep is unquiet and interrupted by dreams. The pulse is irregular. The pupil, at first contracted, after a while becomes fixedly dilated, and the eye squints. In most cases one or more remissions of the symptoms takes place, so well marked as often to induce a belief that the remedial means resorted to have produced a decided impression on the disease; but in a day or two a relapse occurs; the favourable prognosis, if such has unguardedly been given, is at cnce dissipated; and coma and death soon follow. The irregularity of the pulse in this disease is very remarkable: it changes in a most unaccountable manner. Dr. Abercrombie found it, in the case of a girl aged 6, to be from 30 to 40 in a minute for several days, then shortly before death it got up to 70, and occasionally to 80. In a man, aged 36, it varied from 70 to 110. In a boy, aged 7, who was comatose during a particular day, the pulse was was weak, and varied from 60 to 120. The average duration of the disease is variously stated, from a few days to a fortnight or three weeks; it occasionally runs on to four or five weeks, but it must be difficult or impossible to fix the duration, as the moment of invasion so often escapes notice.

The following is a case of simple effusion, which lasted to the 30th day (*Dr. Abercrombie*):—

A boy, aged 9, had slight headache, foul tongue, bad appetite, and disturbed sleep; pulse from 96 to 100. This state continued for a week, with some slight changes, appearing now better, then worse; the head-

ache, for instance, often ceased for a while, and never was severe. At the end of the second week the headache became somewhat greater and more permanent than accorded with the degree of fever. Still the affection, up to the 14th day, presented the ordinary characters of mild continued fever. About this time the headache increased, whilst the other febrile symptoms were diminishing, so that there was perceptible, at least to a practised eye, a want of correspondence between the symptoms. On the 15th day the pulse went down suddenly to 70, yet the headache increased. On the 16th day he had a slight convulsion. On the 17th, coma with squinting, the pulse below the natural standard. On the 18th day, the pulse began to rise, and the coma diminished. On the 19th and 20th he was distinct and intelligent; tongue clean, some appetite, pulse 96. 21st, his state was less favourable; he then sunk gradually into coma, and died about the 30th day of the disease. The pulse had risen to 120, and there was some slight return of convulsion.

Inspection.—All the ventricles of the brain were found distended with clear serous fluid: there was no other morbid appearance, except considerable turgescence of the vessels on the surface of the brain.

Dr. Abercrombie cites cases in which all the usual symptoms of this disease were present, yet no fluid was found after death. Thus in one "the fornix and septum lucidum were broken down into a soft pulpy white mass. There was no effusion into the ventricles, and no other disease in any part of the brain." It would obviously be a contradiction in terms to call this hydrocephalus, though it presented the symptoms attributed to that malady. This and other similar cases shew that the existence of the fluid is a matter of secondary consideration. In some cases the fluid in the ventricles is found a little turbid, and contains flakes of coagulable lymph. In one particularly "the lining membrane of the ventricles was thickened, and easily separated by dissection; its inner surface was covered by a thick

coating of adventitious membrane." Golis gives a case which presented similar diseased changes, and which was very rapid in its progress; it was that of a child aged 14 months, who died in 13 hours from the commencement of the attack.

The following case, detailed by Dr. Abercrombie, shews that the softening of the white substance of the central parts of the brain is owing to inflammation. A girl, aged 6, suffered from obstinate diarrhœa, by which she became much emaciated. It abated considerably after a while, and then she complained of pain in the belly: the bowels were rather constipated. She had headache and vomiting. The pain of the head was severe, and referred to the forehead. Pulse was from 30 to 40 in a minute, and there was constant convulsive movement of the right arm and leg. She gradually sunk into stupor, and became comatose for two days before death, which took place about 14 days from the commencement of the headache. The convulsive movement of the right arm and leg continued throughout her illness, and the pulse, from 30 or 40, rose to 70 or 80 a few days before death.

Inspection.—The ventricles of the brain contained much colourless fluid. In the septum lucidum there "was a ragged irregular opening from loss of substance, surrounded by a ring of inflammation." The inner surface of the ventricles was in a state of high vascularity, and the surrounding cerebral substance was in some places softened and broken down.

HYDRO-CEPHALOID OR HYDRENCEPHALOID DISEASE.

Dr. Marshall Hall some years since directed the attention of practitioners to a dangerous and insidious modification of hydrocephalus. Dr. Elliotson calls it "spurious hydrocephalus." It seems to bear to this disease the same sort of relation which that affection above noticed as being characterised by a turgid vascular state of the pia mater, does to acute meningitis. In this form of hydrocephalus the child may be affected

with drowsiness and delirium, with dilated pupil, and squinting; but the face is pale, the skin cool, and pulse though quick is weak. It may follow exhausting diarrhœa, or supervene upon an attack of acute hydrocephalus. In this form of disease the antiphlogistic treatment is contra-indicated. Dr. Elliotson judiciously observes upon this point, "in most inflammatory diseases a stage may come on in which perseverance in the antiphlogistic treatment is highly improper. A state of irritation comes on instead of inflammation, and the treatment appropriate to the one is most inappropriate to the other."—(Lectures, Medical Gazette, vol. xi. p. 436.) In children who have died of this malady, little or no morbid change has been found in some, in others the vessels "were found unusually serous:" be this as it may, the vessels appeared less distended with blood than usual. In this condition it is "best to give the child ammonia and beef tea every three hours."

DELIRIUM TREMENS (DELIRIUM CUM TREMORE, *Elliotson.*)

This is the brain fever of drunkards (delirium ebriositatis.) It is characterised by constant sleeplessness, tremulous quivering motion in the lips, hands, and muscles generally, on making any effort either of speaking or movement. The pulse is quick; there is a constant disposition to talk now on one subject, now on another. There are two varieties of this malady. In one the skin is hot, the pulse frequent, full, hard, and even, and the countenance flushed. In the other, which is the most common form, the pulse is quick, weak, and, as it were, creeping, the face is not flushed, nor the skin hot, but it is covered by a clammy perspiration. Every thing in the last form indicates a state of irritation merely. The enumeration of the symptoms is but a negative of those which attend inflammatory action. Hence its treatment consists in the exhibition of opium and good diet. The disease commonly arises from dram-drinking; but a similar

condition often supervenes upon other ailments, particularly in persons who are reduced low, and are suffering from depressing passions. Portal mentions the case of a person who was sentenced to solitary confinement. In two or three days he was reported to be insane, which was at first supposed to be simulated. The medical officer made inquiry into the man's history, and found that he was a confirmed drunkard: he ordered him a small quantity of brandy, and that it should be repeated at intervals. In the course of the day the man became perfectly calm and collected.

In the other form of delirium tremens, above alluded to, and which shews indications of excitement, the treatment must of course be modified.

HYPERTROPHY OF THE BRAIN.

[Congestion of the brain, if kept up for a considerable time, or if frequently induced, naturally tends in this, as in other organs, to an increase in its size. But this may go to such an extent as to derange its functions, and constitute what in effect is a diseased state. To this the term hypertrophy is applied. M. Andral (Clinique Médicale; see the translation by Dr. Spillan) details the case of a person who had for some time megrim, which was succeeded by constant pain of the head, and this by convulsions. After death, the membranes of the brain were found healthy, "but its substance presented a singular appearance: the convolutions were compressed, as if squeezed together, and as the spaces between them were scarcely perceptible, they evidently acquired an increase of development at the expense of these spaces, or sulci. The substance of the brain was universally dense and firm, and the cineritious matter had lost its peculiar colour, so as to approach to that of the medullary.]

APOPLEXY.

[*Apoplexia*, from *αποπλησσω*, *percutio*, to strike

down; *sideratio*; *percussio*. It is characterised by loss of consciousness, feeling, and voluntary motion: or in other words, a suspension of the functions of the brain, the respiration and circulation being more or less disturbed.—*Dr. Copland's Dictionary.*]

393. *Symptoms.*—The predisposing circumstances to this complaint are, hereditary disposition, previous attacks, hypertrophy of the left ventricle of the heart, and the period of life from the 50th to the 70th year: in general, without any headache or other precursor, a paralysis, more or less complete, both of sensation and motion, suddenly occurs either in the whole of one side of the body, or only in one of its regions, accompanied by an immediate relaxation of the muscles of the parts affected. In cases of effusion into the brain, the paralysis is always protracted, the time of its duration being proportioned to the extent of the effusion; perception, though weakened, is preserved, unless the coma be very profound: the respiration is more or less stertorous. At the commencement the pulse is hard and full, but we observe no fever, no headache, during the course of the disease; no vomiting occurring at its invasion; on the contrary it is difficult to excite it; there is in general constipation, or retention of urine. When the paralysis attacks the muscles of the face, as is generally the case, the point of the tongue when protruded inclines to the paralytic side, the commissure of the lips at the sound side is drawn upwards and outwards, when the patient moves it, whilst on the other it is depressed and pendant, or merely immoveable; the muscles of the cheek on the paralysed side, and those of the eyelid, are sometimes, though not very commonly, in a state of relaxation more or less complete; the pupil is insensible, sometimes dilated; lastly, the head is drawn to the sound side by the muscles which remain unaffected by the paralysis. It seldom attacks both sides of the body at the same time; but if it should, then the patient is found in a state of total insensibility, or complete carus. It

sometimes happens that after the first attack, a second takes place at the sound side, so suddenly as to induce a belief in the existence of a double paralysis occurring at the same moment: the history of the case alone can rectify the error.

[When a paralysis, whatever be its cause, affects one side of the head, the lips are drawn towards the sound side by the zygomatic muscles, in consequence of the paralysis of their antagonists: and the point of the tongue, as it issues from the mouth, deviates towards the paralysed side, which seems at first rather singular, but is at once explained by considering the muscular power that protrudes the tongue out of the mouth. This is effected by the posterior portions of the genio-glossi muscles, the fixed point of which is at the chin, the moveable one at the base of the tongue. When this part of the muscles acts thus, their two extremities approach, the base of the tongue is drawn forwards, towards the fixed attachment of the muscles, and so the point is pushed out of the mouth, the conjoined action of both muscles being necessary in order to its moving forward in a right line. If one of these muscles becomes paralysed, for instance the left, then the right alone remains to move the tongue, and as its fixed point of attachment is to the right of the meridian line, the base of the tongue is brought forward, and to the right, and its point by consequence deviates to the left. But when the patient draws back the point of the tongue, it always inclines or deviates towards the sound side. It is by a similar mechanism that the face is inclined towards the paralysed side, which is caused by the contraction of the sterno-mastoid muscle of the sound side.—*Lallemand*, vol. i. p. 23.]

394. *The diseases with which it may be confounded* are, encephalitis, softening of the brain, or effusion of blood on its surface.

395. *Anatomical Characters.*—Effusion of blood to a greater or less extent in the hemisphere of the brain, opposite to the side in which the paralysis has occurred.

The fluid is found either in several small cavities, or accumulated into one mass. At other times it is intimately blended with the cerebral substance, and forms with it a red or brown pulpy mass. When the effusion is recent, having existed but for a few days, the blood is black and partly coagulated; it seems adherent to the cerebral substance, but may be removed from it by affusion with water. The part of the brain surrounding the clot is torn and irregular, its consistence much diminished, its colour a deep red, which becomes gradually less so, as we examine it farther from the centre of the effused mass: this alteration, however, extends no farther in general than a few lines. In some cases we find a few shreds of the substance of the brain, which being softened and tinged with blood, resemble very closely coagula of blood.

At a more advanced period, the part of the brain surrounding the clot, after having been softened in the first instance, resumes its firmness, and presents a yellowish colour; a serous effusion is poured round the clot, which gradually diminishes in size, and loses its original colour, for having been black, it by degrees becomes red, then yellow and grey, and finally is absorbed altogether, when the walls of the cavity approach each other, contract adhesions, and after some time present a real cicatrix of a linear form, and somewhat yellow colour, which is produced by means of cellular and vascular bands. In other cases the walls of the cavity approach and remain contiguous, without contracting adhesions to each other; and finally, we sometimes find that the walls become covered with a false membrane, which is very thin, gradually increases in consistence, and changes into a cyst, which contains some serous fluid, at first of a deep red, then of a paler tinge, and lastly yellow, and incloses a clot, which also passes through the different changes we have just indicated.

396. When this is completely absorbed, the walls of the cyst may become united in the same way as occurs in simple cavities. We sometimes find either in the

hemisphere in which the recent effusion has occurred, or in the other, several cavities resulting from old apoplectic attacks.

397. The portions of the brain most usually the seat of these effusions, are the corpora striata, the optic thalami, and the parts immediately surrounding them, and the corresponding ventricle; in some cases the effusion has passed into the opposite one, after having torn through the septum lucidum. In cases of hæmorrhagy of the substance of the brain, the parts that remain unaffected present, when divided by an incision, an infinite number of minute drops of blood, which re-appear again after being wiped away. The vessels of the pia mater, and also the sinuses of the dura mater, are constantly gorged with blood.

It is commonly supposed that the exact pathological state in which apoplexy consists is clearly ascertained, and that the rationale of the symptoms is easily made out. Some of the older physicians conceived that the causes of apoplexy were whatever prevented the vital spirits from reaching the medullary substance of the brain, and the animal spirits to issue from it. Nothing could effect this more surely than blood effused in, or on, the cerebral substance, or serous fluid poured out within its ventricles. Upon this was founded the distinction of sanguineous and serous apoplexy. The origin and application of the word "compression," so constantly used, will at once be perceived by following out the old doctrine as to the views it inculcated concerning the exact seat of the compression. It was held that apoplexy is established whenever the brain and cerebellum are deprived of the influx of the vital spirits, or when the canals which transmit them from these parts to the rest of the body are "obstructed or compressed." From this it was inferred that the part affected is the medullary substance upon which the influence of the compressing cause is directed. Ex causis apoplexiæ supersunt, quæ unâ eâdemque operâ spiritus vitales aditu ad medullosum corpus et animales

exitu prohibent.—*Wepfer, Exercitatio de loco affecto in apoplexia.*

[The history of cases of sudden deprivation of sense and motion—that is, of apoplexy in its literal acceptation—shews that in some, an effusion of blood had taken place either upon the surface of the brain, or into some part of it. In others, nothing is found after death but some serous fluid in the ventricles or under the arachnoid upon the hemispheres. In others, in which the seizure is equally sudden, and the appearances just as strongly marked, no alteration is found. From these facts we may fairly infer, as in the case of hydrocephalus, that the effusion being a result is a matter of less consequence than the previously gorged and turgid conditions of the vessels.]

[The mode and form of the apoplectic seizure differ in different cases: thus, one person feels for some time a sense of weight and fulness about his head: perhaps swimming and dizziness in his eyes. This state varies in intensity, until at length the patient becomes perhaps suddenly faint and pale, then vomits, and falls into a state resembling syncope. In other instances he does not fall; he suffers merely a sudden attack of pain, with a transient loss of consciousness and memory. He recovers in a short time, is enabled to walk, but complains of pain in the head. After a variable interval he is observed to be forgetful, oppressed and incoherent; then becomes comatose, without any prospect of recovery. In other cases the patient suddenly becomes paralysed at one side, and loses also the power of speech, but exhibits little or no stupor: he is sufficiently collected to express himself by signs. Some of these persons recover soon; others sink into confirmed apoplexy; others remain paralytic through life. The most striking cases are those in which the patient falls suddenly deprived of sense and motion, and lies as if in deep sleep. The breathing is stertorous, face flushed, pulse full but not frequent, sometimes being below the natural standard. In some instances there are convul-

sive movements; in others rigid contractions of the muscles and the limbs; or the muscles may be contracted at one side and relaxed at the other. (*Abercrombie.*) As to the ultimate results they are various: some persons recover with little or no ill consequences remaining; others die comatose at different intervals from the seizure; others, who recover, remain paralysed at one side.]

[I have above alluded to the division of apoplexy into two sorts or species—the sanguineous and serous. Cullen admitted several others; such as the traumatic, from injuries of the head; the venenous, from the action of sedative poisons; the mental, from passions of the mind; the suffocative, from an external suffocating cause; and also the hydrocephalic, from serous effusion. The serous apoplexy takes place, it is usually said, in persons of advanced age and debilitated habits: its attack is more slow than in the sanguineous form. The face is pale, the skin cool, the pulse weak; and as to the respiration, one author says it is oppressed and stertorous; another quite otherwise. Portal admits that he adopted this distinction, but abandoned it on meeting with some cases whose symptoms and circumstances came exactly within this description, but still presented after death a turgescence of the vessels of the pia mater and of the dura mater, and also those along the convolutions, the choroid plexus turgid, and some fluid blood at the base of the skull, whilst no serous fluid existed any where. It is much more easy to draw such distinctions in words than to establish them in practice. Dr. Abercrombie's opinion on the matter bears out that of Portal. "I submit," he says, "that this distinction is not founded on observation." The affection called serous apoplexy should be considered as simple apoplexy [which consists of a derangement of the circulation in the head different from inflammation] terminating by effusion.]

Seat of Apoplexy.—Morgagni stated, as the result of his observation, that sanguineous effusions take place most usually in the corpora striata, in the optic thalami,

or in their immediate vicinity, and that they occur more frequently at the right side than at the left. M. Rochoux's experience gives nearly a similar result. Of twenty-eight cases, twenty-four presented the effusion in the corpus striatum, two in the optic thalamus, one in the corpus striatum and optic thalamus, and one under the corpus striatum. Of thirteen cases in which the effusion was seated in other parts, five presented it in the middle of the hemispheres, two in the back part of the ventricles, two in the inner and fore part of the hemisphere, and one in the middle lobe.]

[The following case shews that the functions of the brain may be suspended, and death follow, with all the symptoms of a violent apoplectic seizure, and yet there may be no trace after death of any effusion either of blood or serum. This is what Dr. Abercrombie calls simple apoplexy.

[" A woman, aged about 30, of a full habit, some years before her death had been affected with symptoms in the head, accompanied by impaired speech and partial loss of recollection. Some effects of this attack had continued for a considerable time, especially in her speech, but by degrees she had perfectly recovered, and enjoyed excellent health for a long period preceding the attack now to be described. She was stooping over a wash-tub, when she was seized with a violent fit of sneezing: she almost immediately became insensible, and would have fallen down had she not been observed and supported by some persons standing by her, who carried her to bed in a state of perfect apoplexy. All the usual remedies were employed in the most active manner without the least effect in alleviating any of the symptoms: she lay with all the symptoms of the most perfect apoplexy, and died on the following day. On examination no vestige of disease could be discovered in the brain or in any other organ."—*Dr. Abercrombie*, p. 217.]

[I examined two cases in some respects similar as to the circumstances which attended them; in one there was a slight effusion of blood upon the medulla oblon-

;ata; in the other, the veins in the white substance ontained more blood than usual, which exuded from hem at every incision that was made through it.]

[" A gentleman, aged 24, had been observed to be or some days dull and drowsy, and he frequently com- lained of his head. Not having appeared at his usual ime one morning, his friends went into his room, and ound him lyiug across his bed, half dressed, in a state f perfect apoplexy. The attack was evidently recent, nd it was supposed that he had been seized while e stooped over his basin in washing. His face was ather livid, his breathing stertorous, his pulse slow, nd of good strength. All the usual remedies were mployed with assiduity, but through the day there vas no change in the symptoms. In the course of the ight he recovered considerably, so as to know those bout him, but in a short time after he relapsed into oma, and died early on the following day, little more han twenty-four hours after the attack.

Inspection.—There was a slight turgescence of the essels on the surface of the brain: no other appear- nce of disease could be detected after the most careful xamination. All the other viscera were in a healthy tate."—*Loc. cit.*

The following case is one of apoplexy with serous ffusion:—

" A gentleman, aged 70, of a florid complexion, but ather infirm in his limbs, had suffered repeated attacks f loss of recollection, which were said by his family to esemble fainting fits. At the commencement of the lness of which he died he fell down suddenly deprived f sense and motion. After some time he recovered rom this state of perfect insensibility, but his speech vas now inarticulate; he had lost the power of his imbs, and his right eye was distorted outward. He vas then confined to bed; at times incoherent, at ther times more distinct, but always much oppressed, ordering upon coma; his speech continued very inar- culate, and his pulse was generally about 100. His

strength sunk gradually, without any particular change in the symptoms, and he died at the end of five weeks.

Inspection.—The ventricles of the brain were found distended with colourless fluid, and there was a considerable quantity under the arachnoid: there was no other morbid appearance."]

In the next case there were two distinct extravasations of blood.

[" A lady, aged 40, of a spare habit, on the 15th May, 1811, at 2 o'clock P. M. was suddenly seized with head-ache, accompanied by vomiting and diarrhœa, and at the same time began to talk incoherently for two hours, and then sunk into a coma. I saw her at 5. She was then in a state of perfect coma: her face pale, skin rather cold, the breathing soft and natural, the pulse 65, soft, and rather weak. During the afternoon she had frequent vomiting and repeated diarrhœa: no other change took place in the symptoms. Full bleeding was employed, and a blister on the head, but she was incapable of swallowing. During the 16th, 17th, and 18th, she continued in a state of perfect coma, never opened her eyes, nor showed the least sensibility, except that she drew away her arm with violence when she was bled: she frequently moved all her limbs, and occasionally turned in bed. The pupil contracted a little when a candle was brought near it: the face was sometimes a little flushed, but generally pale. The pulse was from 70 to 80, and of good strength: there had been no return of the vomiting or diarrhœa after the 15th. Bleedings, both general and topical, were employed, with purgatives and so forth. On the evening of the 18th she came out of the coma rather suddenly, like a person awakened from sleep, looked around her, put out her tongue when desired, and took what was offered to her: she also talked a little, but incoherently. 19th and 20th, much incoherent talking: appeared at times to understand what was said to her, but could give no account of her feelings, but only said she was very bad: pulse from 70 to 80. 21st and 22d,

ıcessant talking and delirium. At times unmanageable, nd attempting to get out of bed. At these times the ıce was flushed; at others it was pale. Pulse vary- ng from 90 to 120, weak and irregular. Appeared to e blind, but had the use of all her limbs. 23d, highly elirious and maniacal. 24th and 25th, became calm nd manageable, and at times very weak. Pulse small nd feeble; skin cold, with a clammy sweat. Appeared t times to see, and to know those about her. 26th, elapsed into a coma, lay with her eyelids half shut, nd the eyes distorted outwards. Pulse from 80 to 100, nd rather weak; face pale; was incapable of swallow- ng. Continued in a state of perfect coma on the 27th nd 28th, and died in the afternoon of the 29th. The pulse had continued about 90.

Inspection.—All the ventricles of the brain were full of dark-coloured fluid, like coffee: in the substance of he right hemisphere there was a cavity containing a coagulum of blood the size of a hen's egg: this cavity communicated with the ventricle, and the substance of the brain immediately surrounding this cavity was very soft, and much broken down. In the left hemisphere, at its upper and posterior part, there was a cavity the size of a large walnut; it contained a dark-coloured matter, which appeared to be coagulated blood, but considerably changed in its appearance, being firmer in its texture than recent blood, and of a brownish colour, mixed with portions of a lighter colour, which appeared to be diseased cerebral substance: the substance of the brain surrounding this cavity was much softened and broken down."—*Abercrombie*, p. 239.]

LETHARGY, COMA, CARUS, CATAPHORA.

The soporose states to which these terms are applied, have been considered, by some writers, as distinct diseases, whilst others regard them as indications of various degrees of diseased action in the brain, particularly of an apoplectic character. Mead speaks of them as so many species of apoplexy. "Lethargia et carus sunt

leviories apoplexiæ species." Cullen comprehended them under the title apoplexy; he even modified his definition of it in order to include them; considering them to differ from it in degree only, and that they cannot either in practice or by a consideration of their pathology be distinguished from it. Dr. Cooke, in his Treatise on Nervous Diseases, vol. i. p. 363, observes that Sauvages and Cullen place them under comata, as an order, and Dr. Young and Dr. Good under carus, as a genus; whilst Dr. Cheyne considers them under the general term lethargy, cataphora being a more inveterate form of lethargy, and carus the extreme species (*qu.* degree) of it." The terms species and genus are misapplied when used to denote mere states—morbid states, of which some are transient in individual instances, and in others mutable, as they pass readily one into the other. Considering them as terms used to indicate states of the sensorial power consequent upon some derangement of the material instrument of the mind, *viz.* the brain, and that state usually analogous to what obtains in apoplexy—I may just add what appears to be the sense in which each of them is usually taken. Lethargy is applied to that disposition to sleep which is seen to occur in various degrees in different individuals; it expresses the suddenness with which they pass into the soporose state (ληθη, *oblivio*, forgetfulness; αργος, *celer*, quick.) The lethargic person can, in general, be easily roused, and will then answer when spoken to, and retain for variable intervals his consciousness and power of action. Coma indicates a much greater degree of drowsiness than lethargy, and though the individual may be roused to consciousness, it is only momentarily; he instantly relapses when the excitation which aroused him ceases. Carus (κᾶρος, *somnus*, sleep,) indicates a degree of drowsiness and suspension of sensorial power, so great that the individual cannot be awoke by any mode of excitement. Cataphora (καταφερω, καταφερια, to fall down,) is little used. It was sometimes taken in nearly the same sense as coma. (Dr. Copland makes it synonymous with

the third degree of coma—*coma somnolentum*) sometimes of carus. Frank employed it as a generic term, which included under it lethargy, coma, and carus.

ENCEPHALITIS.

[This term is now restricted to inflammation of the substance of the brain, that of its membrane being comprehended under meningitis. Cerebritis is by some modern writers used in preference to encephalitis, but this cannot in strictness be applied to inflammation of the cerebellum. Phrenitis (from *φρην*, *mens*, the mind,) has until lately, been used to denote inflammation of the brain and its membranes, from the degree of mental disorder which accompanies these affections.]

413. Inflammation of the brain may occur at any period of life from infancy to old age. There are usually some premonitory symptoms, such as a sense of weight in the head, of tinglings in the ears, deception of vision, irritability of the retina, numbness of one side of the body, pain or prickling of the limbs; when suddenly there supervenes a state of contraction or convulsion, continued or intermittent, of the muscles of one side of the body, or only of one of its regions. If the intellectual faculties be not altogether destroyed, the patient complains of headache, usually referred to the side opposite to that which is the seat of the contractions; there is no delirium, the understanding is not deranged, it is merely weakened. Sometimes the contracted limbs are painful, particularly when they are flexed, and an effort is made to extend them; the pupil of the affected side is in some instances contracted, and the eyes closed by the contraction of the orbicularis muscle; the commissure of the lips is drawn outwards even when the mouth is not moved; but when any voluntary motions are made, the commissure of the opposite side experiences a deviation; the muscles of the neck are in a state of rigidity, and draw the head towards the affected side. Still these various effects of irritation diminish gradually in intensity, and are succeeded by symptoms of collapse; the

muscles fall into a state of paralysis with flaccidity; the eye remains closed, but it is by relaxation; the commissure of the lips, hitherto contracted, becomes pendant; the head and mouth are drawn in the direction *opposite* to that to which they had previously inclined; that is to say, to the sound side; the pupil is dilated, the sensibility of the affected side totally lost, and the understanding completely destroyed. We may here remark, that in order to trace these different effects of the disease, we must observe the patient from the first invasion of the attack to its final termination.

398. In some cases we find that a rigid state of the muscles supervenes after a sudden paralysis with flaccidity; this is caused by the apoplexy being followed by encephalitis; the walls of the cavity, in which the effusion had taken place, being then seized with inflammation.

399. If convulsions attack the side that remained unaffected, and if they be not followed by paralysis, they are caused by the occurrence of inflammation of the arachnoid membrane. If, however, a paralysis succeeds, it arises from a new inflammation attacking the opposite side.

400. And finally, when encephalitis succeeds to arachnitis, particularly that of the base of the brain, as occurs usually in children, one of the sides affected by convulsions becomes paralyzed.

401. Encephalitis presents several groups of symptoms, each indicating a lesion of a particular part of the brain. Affections of the upper extremity seem referable to lesions of the posterior fibres of the optic thalamus of the opposite side; those of the lower extremity to alterations of the anterior half of the corpus striatum.

402. Paralysis of both sides of the body at the same time depends on an alteration of the central part of the pons Varolii.

403. When there is no paralysis or muscular rigidity at either side of the body, and when a comatose state occurs, and goes on progressively increasing, we may

suspect inflammation of the corpus callosum, septum lucidum, or fornix.

404. Loss of the power of utterance seems to depend on an alteration of the anterior lobules of the hemispheres.

405. Strabismus, rotation of the eye, dilatation, contraction, immobility, constant oscillation of the pupil at one side, indicate usually an alteration of the surface of the corpora quadrigemina of the opposite side.

406. Lesions of the pituitary gland, of the infundibulum, and of the grey lamella in which it terminates, by causing compression of the optic nerve at one side, behind the point of decussation, may induce blindness of the opposite eye.

407. As to alterations of the transparency of the membranes and humours of the eye, and to paralysis of the organs of sense at one side, they seem to depend either on a derangement of the ganglion of the fifth pair of nerves, where it lies on the petrous portion of the temporal bone, or a lesion of the corresponding walls of the fourth ventricle.

408. Finally, derangements of the circulation, respiration, and of the generative system, without paralysis of the limbs, indicate an alteration of one of the lobes of the cerebellum.

409. *The diseases with which it may be confounded* are, hæmorrhage, or softening of the substance of the brain, nervous fever, some cases of arachnitis, especially when it is circumscribed, and local effusions.

410. *Anatomical Characters.*—The inflamed part of the brain presents different appearances, according to the time that the disease has lasted. When it is only of some days' duration, the white substance, and, still more perceptibly, the grey, exhibits a rosy or slightly red colour, and in it we perceive several vascular filaments. The firmness of the affected part is considerably diminished, and when cut into, the surface of the incision presents (not a multitude of minute drops of blood re-appearing after being wiped away, as occurs in congestion), but a

multitude of small red points, which cannot be removed by ablution. We frequently have occasion to observe these appearances in the cortical substance of the convolutions after arachnitis or violent congestions of the pia mater. In a more advanced stage of encephalitis the brain is red, the vascular injection more strongly marked, and the softening very considerable. Finally, in some cases the blood becomes so intimately combined with the cerebral substance, that its colour approaches that of the lees of wine, being of a deep, dusky red: there is no actual effusion of blood, except we consider as such some small dots, about the size of a pin's head, which we occasionally find in some particular points; in such cases the brain is in a state of extreme softening.

411. If it should happen that the inflammation proceeds to these two latter stages without causing death, then the part affected begins gradually to lose its softness, and ultimately becomes more dense than in the natural state; it retains for some time its red colour, but changes finally to a dusky yellow.

412. The third stage of encephalitis is that of suppuration: the red colour gradually disappears, the blood is replaced by a sero-purulent fluid, which is infiltered into the substance of the brain, combines with it, and gives to it, according to the extent of the admixture, a greyish, dull white, or yellowish green colour. The pus accumulates in some spots to a greater or less extent; sometimes there are no more than one or two drops, but still they are easily recognized by their resemblance to the pus of ordinary phlegmon; in other cases, however, it occupies the entire of the centre of one hemisphere, where, extravasated as it were, it forms cavities for itself, in which we find mixed with it several fragments of cerebral substance: lastly, in some cases, we find several small cavities uniting together to form a large one.

413. These cavities are sometimes found separated from the substance of the brain by a new membrane, formed of the remains of the cellular tissue and vessels

hich had escaped the effects of the suppuration, and hich, when compressed towards the circumference of ie cavity, interlace mutually, become organized, gra-ually increase, and become changed into a membrane hose thickness and density are progressively augment-d. The internal surface of these cysts becomes smooth : ie pus which they contain assumes more and more the haracters of pus formed in cellular tissue, by reason of ne progressive destruction of the cerebral substance, nd finally becomes white, yellowish, or greenish, and erfectly homogeneous. Sometimes when the abscess s seated near the convolutions, the pia mater and arach-noid becoming thickened, concur in the formation of its valls. The pus of abscesses in the brain rarely emits ny odour, except in such as occur in consequence of aries of the bones of the head, particularly of the petrous portion of the temporal bone ; in which cases it is always etid, and the membranes are altered and perforated.

The grey substance is the most usual seat of encepha-itis; and the parts most commonly affected are the orpora striata, optic thalami, the convolutions, pons Varolii, and cerebellum.

SOFTENING OF THE BRAIN.

414. The symptoms of this affection are nearly the same as those of encephalitis, only that its precursors are more common ; hence we shall merely add to what has been already stated under the latter head, that if in any case the intellects remain undisturbed, and the headache continue for a long time ; if sensi-bility and muscular power diminish gradually, and somnolence becomes the leading character; and finally, if there be neither paralysis, rigidity of the muscles, nor convulsion, the patient being in a state merely coma-tose, with strabismus and dilated pupils, we may sus-pect a softening of the corpus callosum, septum lucidum, or fornix. Such a case is very likely to be con-founded with arachnitis of the base of the brain in

adults, or with the same affection in children, if there be convulsions.

415. *The diseases with which it may be confounded* are, encephalitis, nervous fever, arachnitis of the base of the brain in adults, and if convulsions occur, with the same affection in children.

416. *Anatomical Characters.*—Softness to a greater or less degree of the substance of the brain, without any trace of vascular injection or perceptible change of colour, the medullary portion being of a dull white, and homogeneous, whilst the grey substance remains in its natural state: whatever be the degree of softening, even when the part affected becomes perfectly diffluent, it is impossible to discover the least trace of real pus, nor do the sections of the brain exhibit any drops of blood oozing from this surface. If it is the convolutions that are affected, the corresponding part of the pia mater presents no appearance of injection. This sort of disorganization is never accompanied by any peculiar odour. Softening, if we except the mere circumstance of its being confined to parts of greater or less extent, exhibits in every respect the same physical characters as a brain which begins to be decomposed after having been kept for some days. The parts most commonly affected are not those which in the natural state are the least firm; for we find that the walls of the ventricles, the corpora striata, and optic thalami, suffer this disorganization more frequently than the cerebellum.

[By softening of the brain is understood a change of consistence of part of its substance, the rest preserving nearly its ordinary firmness. This expression possesses the peculiar advantage of giving an exact idea of the state of the parts, without involving any opinion on the nature or cause of the disease. On this subject opinions have been very much divided. In the text the reader will find an outline of the peculiar views of Professor Recamier, who still contends that "ramollisse-

ment" is a disease *sui generis*—a peculiar degeneration, which may be compared to certain alterations of the spleen. He denies that these changes are produced by inflammation, and considers them as the effects of a general cause—a disease of the whole system; in fact, an ataxic, nervous, or malignant fever, which attacks the nervous system, and more particularly the brain, destroying and disorganizing its structure, and so producing softening degenerescence, putrid abscess, &c. In direct opposition to this doctrine, Lallemand and Abercrombie contend that this affection is altogether inflammatory in its character, and refer the symptoms exhibited during life, as well as the appearances presented after death, to inflammation of the substance of the brain. Acute inflammation produces the same effects in the brain that it does in other organs, namely, diminution of its consistence, or "ramollissement," and change of colour, the various shades of the latter being dependent on the degree and proportion in which blood in the first stage, and pus in the second, happen to be infiltrated into its tissue. In the former, we observe degrees of tinge varying from a greyish red to a dark dusky hue, not unlike that of the lees of wine; and in the latter, when suppuration sets in and pus begins to take the place of blood, the colour changes again, and varies from a dirty white to a green.]

[The symptoms of inflammation of the brain present two characters altogether opposite, those of irritation and those of collapse. The former is marked by headache, sensibility of the retina, contraction of the pupil, pains of the limbs, and continued or intermittent contraction of the muscles; the latter, by diminution of the intelligence, somnolence, deafness, loss of vision and power of utterance, with paralysis of the muscles, and insensibility of the skin. The first series, it is true, occurs in arachnitis, and the second in apoplexy; but it is only in inflammation of the brain that the two are united; for in it we find irritation, followed by disorganization. Hence we may briefly sum up the distinc-

tive symptoms of these three affections. In inflammations of the arachnoid membrane we find *spasmodic symptoms without paralysis;* in hæmorrhage, *sudden paralysis without spasmodic symptoms:* in inflammation of the brain, *spasmodic symptoms, slow and progressive paralysis, the progress of which is unequal and intermittent.*—Lallemand, first and second letter.]

[I give this abridged summary of the diagnosis of affections on the authority of the eminent pathologist just named. I submit, however, with all deference, that simple arachnitis by itself cannot induce a spasmodic action of the muscles. The irritative influence must reach the cerebral substance in order to produce that result. Moreover, apoplectic affections are often accompanied by spasmodic movements in some parts whilst others are paralyzed; but it may be said that this arises from incipient inflammation in the contiguous cerebral substance.]

[*Case of Encephalitis fatal in the first stage.*—"A woman, aged twenty-six, had laboured under bad health in a variety of forms for eighteen months before her death. Her complaints began with severe headache and frequent attacks of convulsion. After some time these symptoms subsided, and she was seized with cough, hæmoptysis, quick and laborious breathing, and scarcity of urine. The affection of her breathing came on in paroxysms, during which her respiration was 80 or 90 in a minute, and sometimes continued in that state for several days together, her pulse being constantly frequent. After she had suffered for many months from these complaints they subsided entirely without any obvious cause. She then became affected with violent paroxysms of pain in the abdomen, dysuria, and vomiting. The pain was principally in the right side of the abdomen, which was swelled, tense, and painful upon pressure; the paroxysms were succeeded by copious discharges of puriform fluid from the vagina, and there was a temporary alleviation of the pain after every discharge of this fluid. The last time I saw her, which

as a few weeks before her death, there was a general swelling and hardness, occupying the whole right side of the abdomen, extremely tender to the touch, and conveying the impression of extensive organic disease. I did not see her in the fatal attack, which was in the road; it began with severe headache, impatience of light, and fever; these were succeeded by convulsion, and this by coma, and she died comatose about a week after the commencement of this attack.

Inspection.—On examining the body the surface of the brain was found in many places of a dark red colour: this appearance extended in some places to the depth of an inch into the substance of the brain, and was principally observed in the upper and anterior parts of both hemispheres, and on the posterior part of the left hemisphere. The parts so affected were rather softer than the other parts of the brain, and appeared to be more vascular, for drops of blood exuded from them when they were cut. The internal parts of the brain were healthy, and there was no serous effusion. The longitudinal sinus, near its posterior part, was thickened in its coats, so as considerably to diminish its area. The hardness of the abdomen, which was so remarkable a short time before death, had disappeared; and not a vestige of disease could be detected in any of the viscera of the thorax, abdomen, or pelvis."—*Dr. Abercrombie.*]

[*Chronic encephalitis with softening.*—"A young man, aged eighteen, had been for six or eight weeks affected with cough and pain in the chest, and was supposed to be phthisical, but for several days he had been much better, when on the 15th of Dec. 1819, he suddenly fell down, deprived of sense and motion, and became paralytic on the left side, with twisting of the mouth. When partially recovered he complained of severe pain in the right temple; his speech was very indistinct; and his countenance expressive of great stupor. The usual treatment (antiphlogistic) was actively employed, but without much benefit, and he continued for about ten

days with little or no improvement. The left side was perfectly paralytic, a great degree of coma, the speech very indistinct, but he still pointed to the right temple as the seat of fixed uneasiness. During this time his pectoral complaints disappeared. In Jan. 1820, he began to improve so as to have less uneasiness in the head, and considerable motion of the leg, but the arm continued entirely paralytic. His cough now returned with considerable pain in the right side of the chest; he continued without further change till February 15, when he complained of pain in the back of his head, and was seized with loss of speech and of the power of swallowing. He soon recovered his speech, but the power of swallowing was permanently lost, so that from this time he was constantly fed with liquids introduced into the stomach through an elastic gum tube. He was now quite distinct, and did not complain of any pain; the cough again abated; pulse of natural frequency, but feeble. In the beginning of March he seemed to improve a little in strength, so that he was several times taken out in a carriage. There was considerable motion of the left leg, but the arm continued perfectly paralytic; no return of the power of swallowing; speech and intellect entire. He died rather suddenly on the 20th of March, having the day before become extremely weak and pale without any obvious cause.

Inspection.—On removing the dura mater there appeared at the middle of the right hemisphere a remarkable depression, which, when cut into, was found to arise from an extensive mass of pure ramollissement (softening), the part being in the state of a soft white pulp, without any appearance of pus, and without fetor; it extended the whole depth of the hemisphere. In the cerebral matter adjoining to this disease there was a small abscess, no larger than a bean, lined with a firm soft cyst of coagulable lymph. There was very little effusion in the ventricles, and no other disease in the substance of the brain." (*Dr Abercrombie.*)

I select the following case from the same authority, as it presented several abscesses and extensive softening of the brain.

"A man, aged 26, was seized with shivering, headache, sickness, and sudden loss of strength, with fits of delirium in the night. Two days after the occurrence of these symptoms he was admitted into the clinical ward. At this time he was able to walk when supported on one side, but with feebleness and difficulty, his legs, particularly the right, being at each step dragged along, rather than raised from the ground; his expression was dull and listless, but he said he was free from pain. A few hours after he complained of violent pain in the occiput, with frequent vomiting. The pain was relieved by a bleeding. In the evening he was oppressed, and answered questions slowly and with difficulty; there was still some headache, with nausea; the skin hot and dry; the pulse varying from 80 to 100, sharp and moderately full; tongue dry; pupils natural; respiration somewhat short and hurried. About half an hour after this report was taken he sunk into perfect coma, with dilated pupils, for which another bleeding was employed without relief, and in less than an hour he died.

Inspection.—The brain was externally of a reddish brown colour. On the right side of the vertex there was a spot, the size of a half-crown, of a greenish yellow colour. On removing a very thin portion from this spot, an irregular abscess was opened, which contained well-formed pus, and which seemed to be entirely limited to the cineritious substance. In the posterior part of the left hemisphere, on a level with the corpus callosum, there was another abscess, which seemed to be seated in the medullary matter, and was surrounded by softened cerebral substance of a livid yellow colour. In the posterior part of the right hemisphere there were two other abscesses, one in the cortical substance, and the other in the medullary; here, also, a fifth abscess was found, of a very small size, being about the size of

a pea, but surrounded by a more defined cyst than any of the others; there was extensive ramollissement of the fornix, septum, lucidum, and the lower parts of the corpus callosum: the left corpus striatum was softened, and had a greenish yellow colour; the surface of the left thalamus was ragged, and almost fluid, but retained its natural colour."

[*A Case of Abscess in the Cerebellum.*—"A young lady, æt. 18, was seized, 4th March, 1813, with inflammation of the bowels. The inflammatory symptoms were subdued by two full bleedings, but the bowels continued very obstinate, and were not moved in a satisfactory manner till the 12th: during this time a variety of purgatives had been given, with repeated tobacco injections; and by calomel, given as a purgative, her mouth had been affected as early as the 7th.

From the beginning of the attack she had been affected with pain in the left ear, and about the 7th began to complain of headache; this was at first slight, and amid the urgency of other symptoms excited little attention; it increased, however, and on the 11th had become violent, so that she lay pressing her temples with her hands, and screaming from pain: the pulse was at this time natural, and she was free from vomiting and uneasiness in the bowels. On the 11th there was a considerable discharge of matter from the left ear. On the 13th the pulse rose suddenly to 160, and there was such a degree of sinking as required the use of wine. The pulse soon subsided, so that on the evening of the 14th it was at 80, and on the 15th at 60; the headache continued unabated. On the 14th there was a tendency to coma; which was increased on the 15th, with dilatation of the pupil. There was now little room for active treatment, and topical bleeding, blistering, &c. were employed without relief. On the 16th the pulse began to rise again, but was very variable, in the course of a few minutes varying from 80 to 120; she lay in a state of great oppression, but when roused talked sensibly: the headache was still severe. 18th,

ad lost the power of swallowing, but often asked for ..rink, though she was nearly suffocated in the attempt) swallow it; the pulse varying from 90 to 150. 9th, squinting and dilated pupil; pulse varying from 6 to 160. 20th, squinting increased; swallowed a ttle once or twice with effort, at other times was nearly uffocated in attempting it; was still quite sensible hen roused, and complained of violent headache. She ow sunk gradually, and died on the 22d; she had ontinued sensible when roused, and knew those about er, till an hour before her death; she also retained the ense of sight, though the pupils were much dilated.

Inspection.—The surface of the brain was natural; ne substance showed marks of increased vascularity, nd the ventricles were distended with colourless fluid. he left lobe of the cerebellum was entirely converted nto a bag of purulent matter of a greenish colour and ntolerable fœtor. It was contained in a soft and or- anized sac, which appeared to be of recent formation. \ portion of the dura mater on the outor side of the bscess was thickened and spongy; the bone was sound; he caput coli, and about 18 inches of the extremity f the ileum, were of a dark livid colour, but sound in heir structure."—*Abercrombie*, p. 109.]

TUBERCLES AND CANCER OF THE BRAIN.

417. *Symptoms.*—The only symptoms which can in- luce us to suspect the existence of tubercle, scirrhus, or ancer of the brain, are violent headaches, continued or ntermittent, with spasms of one or both sides of the ody, and total suspension of the faculties; to these in ome instances are added a consecutive paralysis, with liminution or abolition of the senses and intellects. hese different tumors in general give rise to ence- halitis, which then presents the train of symptoms lready detailed when treating of that disease. In children, tubercles are very common, and induce acute dropsy of the ventricles of the comato-convulsive form, as we have already stated. Occasionally, however,

these tumors do not give rise to any appreciable derangement.

418. *The diseases with which they may be confounded* are, arachnitis of the ventricles and base of the brain, encephalitis, fungus of the dura mater, or hydatids in the brain.

419. *Anatomical Characters.*—The accidental tissues most usually found in the brain are scirrhus, tubercle, and encephaloid. They are found in the form of round irregular masses, varying from the size of a pea to that of an egg, of a greyish or reddish colour, and sometimes nodulated on the external surface. The tumor sometimes consists but of one of these structures, but we occasionally find several combined together: the nature of the degeneresceence can be determined only by cutting into it: the interior is sometimes found softened, and contains some effused blood. The adjacent portion of the brain is, in general, in a state of softening to a greater or less extent; at other times the accidental production is lost gradually in the cerebral substance, without presenting any line of demarcation. When the tumor extends to the convolutions, it generally gives rise to a chronic inflammation of the pia mater and arachnoid membranes.

EPILEPSY.

[The term epilepsy is taken from the suddenness with which the attacks come on (επιλημψις, from επιλαμβανω, I seize). It was also called "morbus caducus," or in popular phrase the "falling sickness." In each attack the patient suffers a sudden deprivation of sensation and consciousness, accompanied at first by spasmodic action of the voluntary muscles, which is soon followed by various convulsive movements.]

419*. *Symptoms.*—This affection is intermittent, chronic, without fever, comes on by fits, with general convulsions, complete loss of intelligence, total insensibility, but still without any consecutive paralysis either of mobility or sensibility. At a moment when he least

expects it, the patient suddenly becomes senseless, the eyes are opened widely, the pupils remain immoveable, the direction of the eyes becomes changed, the face is drawn to one side, the mouth dragged towards the ear, and the teeth firmly closed; then, after some minutes, the muscles of the neck become rigid, the head is turned to one side, the jugular veins become distended, and the face is in a state of livid turgescence; the muscles of the countenance are then seized with spasmodic contractions, frequently repeated; foam issues from the mouth; the extremities, particularly the upper, are agitated by convulsive motions; the thumbs are buried, as it were, into the palms of the hands; still the thorax remains fixed and immoveable; the respiration is high and agitated; suffocation imminent. To this state, which lasts from two to eight minutes, and may be repeated at very short intervals, succeeds a general relaxation of the muscular system, paleness of the face, and a gradual return to freedom of respiration; the countenance for some time retains an expression of stupidity; the intellectual and sensitive faculties, which had been plunged in stupefaction, gradually resume their activity, and the patient begins to perceive a creeping sensation all over his body. At other times the attack is much less violent, and consists only of a momentary loss of sense, with slight and partial convulsions of the eyes, mouth, of an arm or finger; and may or may not be accompanied by a fall. Sometimes the attack is preceded by a peculiar sensation in some part of the body, which directs itself towards the brain, and thence causes the loss of sense, and the various other phenomena mentioned above: this is what has been termed the *aura epileptica*. Epilepsy may occur at any period of life; it generally goes on increasing, as the fits occur at shorter intervals; it induces a loss of memory, and tends essentially to produce madness and idiocy.

420. *The diseases with which it may be confounded* are hysteria, worms in the intestinal canal, the first stage

of acute hydrocephalus, encephalitis, with different tumors of the brain and its investments.

421. *Anatomical Characters.*—We know of none that are peculiar to epilepsy; still, several alterations of the brain and spinal marrow may give rise to epileptic symptoms, as the history of these affections demonstrates.

[Epilepsy presents many varieties in different cases, and even in the same individual in different periods of its progress. Dr. Copland (*Dictionary of Practical Medicine*, art. *Epilepsy*) arranges all these under three heads:—1. The simple forms of the disease. 2. Its complications. 3. Its sympathetic relations.

Now even the simple epilepsy assumes different forms, dependent on various degrees either of nervous susceptibility or of vascular fulness, the latter being considered as epilepsy with plethora (epilepsia plethorica, vel sthenica), the former as epilepsy with defective power (epilepsia nervoso vel asthenica.)

The disease is called sympathetic epilepsy when it is dependent on disorder of important organs, such as the heart, stomach, and bowels, particularly when worms are contained in them (epilepsia verminosa). Lastly, it may depend upon some affection of the spinal cord or its membranes (epilepsia spinalis).

The most frequent complications of epilepsy are, with apoplexy, mania, paralysis, hysteria, chorea, and catalepsy: hence, the morbid appearances found after death must be infinitely various. Some years ago I saw a boy who was epileptic from infancy, and who, in one of his usual fits, fell over a cliff by the sea-side, and received a very severe lacerated wound of the scalp, which healed slowly and with a copious suppuration. While the discharge continued he was free from any epileptic attack; but as soon as the wound healed the fits returned as before.]

HYSTERIA.

[Hysteria (τα ὑστερα, viscera posteriora—meaning,

however, the vulva or uterus) is a convulsive affection without febrile action. The convulsive attacks come on at intervals, attended with a sense of suffocation. As some of its attendant symptoms resemble those of hypochondriasis, they have been considered by some writers as analogous affections, or as varieties of the same derangement. Hence they justify what would seem an absurdity if the words were taken in a literal sense, namely, the division of hysteria into two varieties —hysteria feminina et masculina.]

422. *Symptoms.*—Hysteria is an intermittent, irregular, chronic disease, that comes on by fits, and usually attacks females from the age of puberty to the critical period; it very commonly occurs on the suppression or diminution of the menses, particularly in persons of a nervous or irritable temperament, who have indulged much in venereal pleasures, or have been for a long time deprived of them. The fit begins with a yawning, numbness of the extremities, involuntary laughing and crying, alternations of pallor and redness of the face, and a sensation as if a ball, commencing at the hypogastrium, ascended through the abdomen and thorax to settle at the throat, where it produces a sense of violent constriction, with threatening of suffocation. Then spasmodic motions of different parts of the body occur, or there is a tetanic stiffness of them, with loss, more or less complete, of sensation, but without any consecutive paralysis. Hysteric fits do not in general come on instantaneously, and without cause, as is the case in epilepsy; chagrin, pain, mental emotions, usually give rise to them. Hysteria does not tend essentially to increase, nor does it determine, as a consequence, madness or idiocy.

423. *The diseases with which it may be confounded* are, epilepsy, certain diseases of the uterus, intestinal worms.

424. Its *Anatomical Characters* are altogether unknown.

CATALEPSY.

[Catalepsy (καταλαμβανειν, to seize, in allusion to the suddeness of the seizure,) is, in popular language, called "trance." It is an affection of very rare occurrence: it is often simulated by mendicants, to extort charity; hence some nosologists have been disposed to regard it as feigned in all cases, but many instances are recorded in which there were no inducements to practise any deception. The duration of the seizure is variable, sometimes lasting only for a few minutes, at others for days. It may end in death, as in a case cited by Dr. Good, from Bonet, or in apoplexy or mania: in some instances recovery has taken place.]

425. *Symptoms.*—Suspension of sensation and motion occurring suddenly, whether the patient be sitting, standing, or lying, and accompanied with such a complete immobility of the different parts of the body, that they retain indifferently the position which they had before the attack, or any that may be given to them during its continuance. The circulation and respiration are not at all disturbed; in some instances, however, they become more slow. These attacks, which occur at intervals more or less irregular, last usually from some minutes to several hours, or even for the length of a day. This disease, which is very rare, is sometimes simulated: it should rather be considered as symptomatic than as an essential affection.

426. Pathological anatomy has not as yet been able to assign any form of alteration peculiar to this complaint.

CHOREA.

[Chorea (χορεα, a dance,) is popularly named Saint Vitus's dance, *Chorea Sancti Viti*; the French call it the dance of St. Guy, and the Germans the dance of St. Veit, which are obviously but inflections of the original word.]

427. *Symptoms.*—A certain number of, or in some

cases all the voluntary muscles, are subject to irregular and continued movements, producing remarkable grimaces and contortions. The disease is sometimes confined to one side of the body, or is more perceptible at one side than at the other. The muscles, in addition to this incoherence in their motions, are affected with a sensation of pricking, creeping, or of numbness. Chorea attacks children much more frequently than adults, and females more usually than males.

428. *The diseases with which it may be confounded* are, chronic encephalitis, certain affections of the medulla spinalis, or tubercles on the brain.

429. Its *Anatomical Characters* are altogether unknown.

[The morbid changes found on making post-mortem examinations appear to be results of the various deranged actions induced in different organs during the progress of the malady. Hence all those hitherto noted are common to this and other affections—such as a congested state of the cerebral or spinal vessels; derangement of the stomach, or of the liver.]

HYPOCHONDRIASIS.

[Hypochondriasis, or Hypochondrism, signifies, in its literal acceptation, a disease of the organs placed under the cartilages of the ribs (*υπο*, under; *χονδρος*, the cartilage), or perhaps more properly, a malady dependent on a deranged action of these organs, viz., the stomach and liver. If the chief seat of the disease was in the digestive organs, its pathology and treatment would be much better defined than they are; but though many of its symptoms are of the dyspeptic character, others are cerebral or mental,—so much so that most writers consider the brain as the primary seat of the affection. When we observe a person become depressed and gloomy, haunted by apprehensions the most improbable, incapable of applying to his ordinary pursuits from inability to lay aside some train of morbid thought which he has indulged, until it has become altogether domi-

naut over him—when we know that this has grown out of some disappointment or loss, or vexation, and when the animal functions are little if at all disturbed—we have no hesitation in saying that the affection is the result of gloomy or agitating passions working injuriously upon the brain. Another person, confined to a laborious and sedentary occupation, passes into a similar state, but on tracing back the history of his case it is found that the first bodily ill of which he was conscious, was a confined and irregular state of his bowels, loss of appetite, dyspepsia and flatulence. Hence it is at once concluded that the malady depends on deranged action of the digestive organs; yet even here it may have arisen from continued mental exertion, the other functional disturbances being secondary; or both may have gone on concurrently, so that it is difficult to affirm positively which was the point of departure from the healthy state: for from the commencement there usually is some degree of nervousness or irritability. In some cases it arises from the suppression of habitual discharges, as the catamenia, or hæmorrhoids. But as all these disturbing causes occur frequently without producing any form or degree of hypochondriasis, it is fair to infer that the constitution and temperament of those who pass into this state must be such as to render them more liable to it than others. The varieties of this affection, both in character and degree, are infinitely various. Some are merely gloomy and desponding at intervals; they suffer, as the phrase is, from "lowness of spirits," or "fits of the vapours." Others turn their thoughts inwards upon themselves so constantly, that they begin to fancy they are the prey of some serious disease or bodily ailment. Not a few are depressed even to despair, and become altogether apathetic as to their personal ties or worldly concerns.]

130. *Symptoms.*—This affection is chronic in its character, and very irregular in its course; it sometimes is intermittent, in general attacks adults, particularly men, it in many cases is consecutive on gastro-intes-

ritis, if the persons attacked by it are of a nervous temperament, and if their hepatic system be considerably developed, or if their moral and physical habits tend to derange the digestive functions, at the same time that they exalt and cultivate the intellectual.

The principal effects of hypochondriasis are referable to disturbance of the intelligence, of digestion, and functions of the liver; these are, gloominess, irascibility, distrust even of intimate friends, constant restlessness, timidity, and fear of death; sleep becomes short and agitated; sometimes there is headache, and even vertigo; the digestion is slow and painful, accompanied by distention and swelling of the stomach and intestinal canal, flatulence, colic, and constipation in most cases; in some cases, however, we find diarrhœa; the pulse is sometimes frequent, contracted, intermittent; at others slow and irregular; the patient heightens the extent of his sufferings, and describes them in exaggerated terms. He experiences various sensations, in general momentary, such as cramps, tremblings, palpitations, faintings, and irregular pulsations in the abdomen. The respiration is sometimes difficult, and as it were constricted. This affection frequently terminates in monomania.

431. *The diseases with which it may be confounded* are, chronic gastro-enteritis and mania.

432. *Anatomical Characters.*—We usually find some alterations of the brain, or of the abdominal viscera; but it is very difficult to decide whether they are the true cause of the disease.

MANIA.

[Insanity is a generic term, which includes under it several states of the intellectual, the moral, or the perceptive powers. Its synonyms are vesania, alienatio mentis, furor, mania. It is often said that the distinguishing characteristic of insanity is some impression, whether visionary or unfounded, which has taken such possession of the mind as to exclude others, or deprive

them of the influence which they ought to have in the formation of judgments or opinions, or in determining one's course of conduct. It is true that there is a form of insanity which comes within this limit, but it is ordinarily called monomania, which consists in this, that the subject of it is insane upon one point, though he is intelligent enough upon all others. It cannot be expected that any general description could include all the varieties of form which aberrations of mental manifestations may assume, or that a well marked and practically useful line of distinction could be drawn between the healthy and the disordered manifestations of the mind, by any collocation of words arranged in the form of a definition. Most of the descriptions given, turn upon a consideration of the deranged state of the intellectual faculties, omitting the other section, viz., the moral. A definition of insanity, whenever any is attempted to be made, must have a reference to its correlative, sanity, and therefore must be drawn from the opinions which the author of it entertains concerning the nature of the mind and its faculties. But of this we have no adequate knowledge. Hence the difficulty (a difficulty which, as Mr. Haslam observes, "has been felt by every person who has touched the delicate string"), of forming a satisfactory theory of the human mind; and if we find it to be thus difficult, or beyond our reach, to arrive at a knowledge of the healthy and natural manifestations of the mind, how much more difficult must it not be to investigate the various derangements of which it is susceptible in disease. According to Dr. Spurzheim, (Observations on Insanity, p. 72), it consists in this—that there exists an aberration of an intellectual power or sensation from the healthy state, the individual who is the subject of the aberration being incapable of distinguishing this his diseased state, or when there is an aberration of perception or feeling without being able to distinguish it, or to repress and modify it by an exercise of the will. In other words, "the incapacity of distinguishing the diseased functions

of the mind, and the irresistibility of our actions, constitute insanity."

Many facts demonstrate the truth of the position, that insanity may be intermittent and partial, or both. Like other diseases or diseased modes of action, when once induced it is liable to return; it is also transmitted, just as gouty and scrofulous habits are. As in other diseases, it is often difficult to say, when the more active state has subsided, whether it is a mere remission, with a tendency to recur, or a cessation with a disposition to go on to convalescence, so in insanity it is very difficult to affirm whether there is a sufficient cessation of morbid action, and a restoration of healthy function, to warrant us in saying decidedly whether the individual is sane. The time which elapses between successive attacks is called the interval, and it is said to be distinct, complete, or lucid, when the patient's intelligence is clear with respect to his sensations and ideas, and when he has perfect free will with respect to the direction of his feelings and passions. Partial insanity presents, as may readily be supposed, almost numberless varieties. Thus, in some cases, the intellectual operations, such as memory, judgment, imagination, may remain undisturbed, the power of the will and its restraint over the passions being altogether suspended. A case related by Pinel, in his Treatise on Insanity, is frequently cited in proof of this: it was that of a lunatic who evinced an irresistible disposition to murder his wife, though affectionately attached to her; still, in respect to his mental powers, his memory, judgment, &c., he showed no trace of alienation. During his lucid moments he spoke with horror of his propensity. Dr. Gall mentions the case of a person who happened to witness the execution of a criminal, and was soon after seized with a propensity to commit murder, though still retaining a clear conviction of the criminality of his disposition. If the diseased condition be thus limited in extent—if, in some, it deranges the intellectual faculties, and, in others, the feelings, propensities, and sentiments—it follows that

some, perhaps many, of those who are in the latter condition, and who from their acts are regarded as criminals of the worst description, are fitting subjects for moral restraint, as being incapable of exercising due control over their actions, rather than of criminal punishment.

Of the various forms of insanity, and they are far too numerous to be noticed here, otherwise than in the most general way, I shall allude only to two, the acute and the chronic, and that merely to observe that the one is in general remediable, whilst the other is little influenced by medical treatment. "Insanity," observes Dr. Halloran, "is in every instance associated with organic lesion, either entirely originating in, or ultimately combined with it; not merely confined to the brain, but likewise with a diseased action of the thoracic and abdominal viscera." [Essay, p. 2.] The causes to which insanity is ascribed may be arranged under two heads; one consisting of those which operate injuriously through our bodily organs, the other through our mental emotions. In the former are included intemperance, excesses of different kinds, constant application to study, with want of rest; to which may be added, such influences as excite inflammation of the brain and its membranes. Under the other head are included terror, remorse, loss of friends or fortune, fear of punishment. "I have long entertained," observes the writer above quoted, "a practical distinction between these two species of insanity: I am willing to admit that the malady, though differing in origin, is in effect the same," (doubtless in its influence on the brain as the material instrument of the mind,) owing its existence as accident may direct: in one person to mental, in another to organic impressions. In the mode of cure I would inculcate the necessity of the most cautious attention to this important difference; least, as I have often known to be the case, the malady of the mind, which is for the most part to be treated on moral principles, should be subjected to the operation of agents altogether foreign to

he purpose; and that the affection of the body, arising rom lesion of one or more of the vital organs, may uffer by the neglect of approved remedies." The reatment, then, may be set down as of two kinds, the noral and the medical, and the latter, as being directed t one time to the acute, at another to the chronic form f the malady, is resolvable into the active and the pallia- ive or soothing, the former being obviously antiphlogistic.

If insanity be admitted to be in many cases partial as o the extent of its operation upon the mental manifesta- ions, if it consists in an aberration or hallucination in espect to some one particular matter, how far, it is requently asked, are persons in such a state as this to e considered fit to manage their own concerns, or orthy of credit as witnesses in courts of law? If in- anity be intermittent, how far are persons who aro able to attacks of mental alienation to be considered compotes mentis" during the intervals? No general nswer can be given to such questions; every individual ase supplies a new problem to be solved, and must be etermined by a full consideration of the whole of the icts and circumstances which are presented to our ob- ervation during its progress.]

433. *Symptoms.*—Derangement more or less marked, ut of long continuance, of one or more of the faculties f the mind, without any perceptible disturbance of the ensations or voluntary motions. There is no fever, ex- ept during the period of excitement, which usually ma- ifests itself by headache, want of sleep, delirium, and arious hallucinations. When some particular idea onstantly haunts the patient, the disease is termed *monomania.* The organic functions are seldom disturb- d, except the nutrition, which is not properly perform- d; hence maniacs lose flesh and become thin. This ffection may be confounded at its commencement with achnitis, drunkenness, or with the effects of certain oisons.

434. *It may be confounded,* in an early stage, with achnitis, the effects of certain poisons, or with drunk- nness.

435. *Anatomical Characters.*—Mania may be connected with alterations of the brain or its investments, but several cases occur in which it cannot be traced to any such cause. In some it is connected with chronic inflammation of the intestinal canal.

AMENTIA.

436. *Symptoms.*—Diminution, more or less considerable, of the powers of the mind, with weakness or loss of memory, total indifference, and incoherence of ideas and actions, which have no determined object. This affection most commonly occurs in persons advanced in years; it is not accompanied by fever, or any disturbance of the organic functions; and as, in most instances, it arises in persons who had previously been of sound mind, it must, in such at least, be regarded as consecutive upon some affection of the substance of the brain.

437. *It may be confounded* with chronic arachnitis, and with some morbid alterations of the brain.

438. *Anatomical Characters.*—These are referable to various alterations of the brain when the affection is symptomatic; sometimes we find atrophy of the brain depending on old age.

IDIOTISM.

439. *Symptoms.*—The faculties of the mind are incompletely or not at all developed, in consequence of a defective organization of the brain—a condition which may commence at the first moments of existence, or be produced at any subsequent period before the full evolution of the understanding. In these persons the general sensibility is but little developed; the senses are generally dull, and the power of articulation so defective, that in many cases they may be said rather to howl or cry; the limbs are wasted, paralyzed, or ill-formed; the temperament is generally lymphatic, sometimes scrofulous. There is no perceptible alteration of the digestion, circulation, or respiration.

440. *Cretinism.*—These constitute a variety of idiots,

presenting the following physical characters: head rather large, forehead and occiput usually flattened, visage square, and marked with wrinkles; nose thick, short, and broad; mouth very wide; ears thick and elongated; "goitres" more or less voluminous and pendant towards the chest; thorax narrow and flat; genital organs much developed; height seldom more than four feet.

441. *Anatomical Characters.*—The heads of idiots usually present a deficient conformation; their size is most commonly small; the forehead is flat, short, and sloping backwards; the occiput is depressed; there is sometimes a perceptible difference in the development of two sides of the skull. The brain presents also a corresponding deficiency of organization.

DISEASES

OF THE

SPINAL MARROW

AND OF

ITS MEMBRANES.

ARACHNITIS SPINALIS.

[As inflammation of the pia mater of the cord generally, if not always, accompanies that of the arachnoid membrane, we must include the consideration of the two together, under the term Meningitis (spinalis). It is usually obscure and insidious in its progress; the pain, which sets in at an early period, being mistaken at one time for lumbago, at another for rheumatism. The pain is referred at first to different parts of the back, then it extends to the limbs. The muscles of the back became rigid and contracted in proportion to the degree and extent of the pain, and bend the body back forcibly. This state admits of relaxations from time to time, and so something of a jerking motion is given. I have seen the arms in a constant state of jactitation, being alternately projected forwards, and retracted with great violence. The slightest pressure, or change of position, increases the pain, and every thing indicates increased sensibility. These symptoms, particularly the increased sensibility, are considered by M. Ollivier (Traite de la Moelle Epiniere) to be cha-

racteristic of meningitis of the cord, and to distinguish it from myelitis, or inflammation of its substance: for the latter is accompanied by more or less complete abolition of sensibility. The pain, however, and the muscular contractions, with the altered sensibility, cannot arise from inflammation confined to the membranes; they commence only when some of the irritative influence extends to the substance of the medulla itself, for a mere membrane does not preside over the sensibility or mobility of parts; that is the proper office of the nervous centres themselves.]

442. *Symptoms.*—In this affection the head is drawn backwards, the muscles on the posterior part of the trunk are in a state of permanent contraction, pain, more or less violent, is felt along the vertebral column, more acutely, however, in some particular parts of it; the intellectual faculties are not engaged; the head moves from one side to the other, when inflammation attacks the upper part of the medulla oblongata. We shall have additional reason to conclude that the disease is arachnitis, if the patient has received a fall, or suffered any injury of the vertebral column; or if there exists at the same time symptoms of arachnitis of the brain, in which case the symptoms of both affections will be blended.

443. *The diseases with which it may be confounded.*—Arachnitis of the spine may be confounded with tetanus, and with different acute affections of the medulla spinalis.

444. Its *Anatomical Characters* are the same as those enumerated when treating of arachnitis of the brain.

[The following case exhibits the leading symptoms of meningitis of the spinal cord, and the morbid changes which it induces. It occurred in the practice of Dr. Duncan, and is detailed in full by Dr. Abercombie, page 347:—

A woman, aged 22, had been for more than three weeks affected with pains of a rheumatic character extending over every part of her body. She was admitted, on the 11th of April, into the clinical wards,

under the care of Dr. Duncan. She then complained of pain in the back of the neck and the loins, and at the top of the right scalpula: also of an acute pain in the right hypogastric region, increased by pressure and by inspiration. The head was considerably retracted, and could not be bent forwards; the spine was bent backwards, and the muscles of the back felt contracted and rigid; she had alternate rigors with flushes and heat; great restlessness; the spine was curved backwards as before, and the bowels were obstinate: pulse 114. On the 14th, after free purging was produced, she seemed somewhat relieved, and could bring her head a little forward, but she said the pain was unabated: it was now chiefly referred to the right shoulder and the upper part of the chest, sometimes shooting into the right axilla: she had also pain in the lower part of the belly, and the abdomen felt distended and tense: she had less difficulty of swallowing, and was inclined to sleep, but during sleep there was much subsultus: pulse 148, and small. On the 15th, the head was less retracted, and there was more power of moving it: the pains were abated, except in the abdomen; there was much subsultus and tremor; pulse 140: bowels open; tongue foul: she was much inclined to sleep, but quite distinct when roused; at night she was put into the warm bath, and expired in the bath: immediately after death the muscles of the neck became entirely relaxed.

Inspection.—There was some fluid in the ventricles of the brain, and on the posterior edge of the right lobe of the cerebellum there was a thread of coagulable lymph. The cervical portion of the spinal cord was healthy; the dorsal and lumbar portions were covered by a uniform coating of coagulable lymph of a greenish yellow colour, and of soft consistence; it was chiefly on the posterior part betwixt the cord and its membranes, and the membranes were remarkably vascular.]

HYDRORACHIS.

115. *Synopsis.*—Hydrorachis, or spina bifida, there is

enerally congenital, may sometimes be observed at ore advanced periods of life; one or more tumors, road at the base, or attached by a pedicle, are found the lumbar region, or more rarely in the superior arts of the spine; their size is variable, their surface general transparent, without any change of colour of he skin. Pressure exerted on one of them increases he size of the others, if there be several, and at the same ime causes symptoms of compression of the brain; the ame effect takes place when the brain is pressed, if here should happen to be hydrocephalus. The limbs f these patients are feeble and ill developed; the ectum and bladder are paralysed.

446. *Anatomical Characters.*—When the skin forms a overing for the tumor, it is thickened, or, on the con- rary, is thin and transparent; in some cases it is want- ng altogether, and then the coverings of the tumor onsist of the dura mater, pia mater, and arachnoid nembrane; the pia mater is in general much injected nd red. In some instances the lateral arches of the orresponding vertebræ are wanting; in others, they resent but a slight separation; and finally, in some ather rare cases, the vertebræ are divided altogether. The cavity of the arachnoid membrane contains a fluid, erous and limpid, sanguinolent or purulent, which may ommunicate with the brain itself, or be merely inclosed n the pia mater. We sometimes find a division, to a reater or less extent, of the substance of the medulla; n other cases very few traces of its structure can be ound where the tumor had been situated.

INFLAMMATION AND SOFTENING OF THE MEDULLA SPINALIS.

447. *Symptoms.*—This disease usually supervenes after ontusions of the vertebral column, and is distinguishable y pain referred to some point of the spine, and by a ensation of pricking and darting in the extremities; here is no derangement of the intellectual faculties, or

of the senses, unless the inflammation be near the pons Varolii; in which case there may be total loss of sense, with aphony, trismus, paralysis of the whole body, retroversion of the head, and embarrassed respiration. When the cervical portion is affected, we usually observe a rigidity of the neck, permanent contractions or convulsions of the upper extremities, which are succeeded by paralysis and considerable disturbance of the respiration. When the dorsal portion is the seat of the disease, the trunk is sometimes agitated by continued convulsive motions; there are at the same time palpitations, high fever, and greater or less difficulty of respiration. Finally, when the lumbar portion becomes inflamed, we find paralysis of the lower extremities, constipation and retention of urine, or involuntary evacuations. When the disease is chronic, there sometimes is no pain, and then the paralysis of the lower limbs, of the bladder and rectum, comes on gradually.

448. *The diseases with which it may be confounded* are, certain forms of rheumatism, or neuralgia of the limbs.

449. *The Anatomical Characters* are the same as these of inflammation and ramollissement of the brain.

TUMORS OF THE MEDULLA SPINALIS AND ITS MEMBRANES.

450. *Symptoms.*—The present state of knowledge does not furnish any signs by which we can distinguish the existence of the different tumors that are developed in the medulla spinalis and its membranes; we can only say, that they sometimes induce paraplegia and various epileptic symptoms.

451. *Anatomical Characters.*—These tumors may in general be referred to the heads tubercle, schirrus, and hydatid.

452. *They may be confounded* with tumors external to the vertebral column, compressing the nerves or their origins.

[1. Though authors so constantly speak of inflammation of the arachnoid membrane, still no vessels can be

ound in its tissue. Ribes and Ollivier are of opinion at the seat of the inflammation is not in the arachoid of the spine, but in the dura mater, which receives great number of vessels, in the pia mater, and in the essels of this latter membrane, which penetrate into ne substance of the medulla. Hence they account for ne red tinge and thickening (which are reported by ifferent persons as having been observed in the arachoid) by attributing them to injection of the vessels of he other membranes, and infiltration or thickening of he sub-serous cellular tissue. Inflammation of the nembranes of the medulla spinalis very frequently xtends to those of the brain. The symptoms of both ffections are therefore usually found united; however, here are two which may be considered pathognomonic of rachnitis of the spine—the first is a general contraction of the posterior muscles of the trunk, producing a omplete opisthotonos. As this has been observed in ases where examination has demonstrated an inflamnation of the arachnoid of the spine, that of the brain eing free from any such affection, it may be regarded s diagnostic of arachnitis spinalis. The other symptom is pain extending along the spine, but more parcularly referred to some parts of it.

Tetanus has been attributed to inflammation of the nembranes of the spinal marrow. This, it is true, has een observed in many subjects that had died of tetanus; ut as in several others no trace of such inflammation ould be found to exist, we cannot admit the conclusion nat it is the essential cause of the disease. Some pahologists are of opinion that this inflammation is conected chiefly with traumatic tetanus. When we consult he writings of those who have treated of this subject, e find that they speak of inflammation of the medulla pinalis in such a way as to leave it a matter of doubt whether they mean inflammation of the medulla itself, r of it, together with its membranes; so that we find it difficult to ascertain whether there had been inflammation f all these parts, or whether it had been confined to

one or other of them. Dupuytren, however, found the investments alone inflamed in an individual who had died of tetanus, caused by a punctured wound of the foot; and Brera says, that he has seen the substance of the medulla altered in similar cases.

The progress of arachnitis spinalis is, in general, rapid, and its termination fatal. Ollivier reports one case that lasted thirty days, but death usually occurs from the tenth to the fourteenth.—See Ollivier, p. 319.]

[2. Several writers consider softening of the substance of the brain and medulla spinalis, as a peculiar alteration of the nervous system altogether independent of inflammation. It is true that this morbid alteration has been observed in cases in which no trace of local congestion could be found; but, in general, the membranes in the neighbourhood of it are red and thickened, and their vessels injected with blood: and sometimes those which penetrate into the substance of the medulla, though not visible in the healthy state, become so by being injected, and give to the part a more or less deep tinge of red. These circumstances tend to shew that softening is produced by inflammation, which is further confirmed by the fact that it is most constantly seated in those parts of the brain and medulla which are most vascular in their structure—such as the corpora striata, optic thalami, and convolutions of the brain—and those swellings or enlargements presented by the medulla in its lumbar, cervical, and dorsal regions, which are the most vascular parts, as they contain the greatest quantity of grey substance. The softening may extend to the whole thickness of the medulla, may occupy but one of its lateral halves to a variable extent, or may be found in its anterior or posterior lateral facette only; it may exist in the medulla oblongata solely, or in the cervical, dorsal, or lumbar region. Sometimes an increase of volume is observable in the affected portion: in some cases the limbs, even at the commencement, are attacked with convulsive movements of variable duration, which, after some time, are succeeded by

aralysis; in others they are in a state of permanent nd painful contraction; and lastly, they are sometimes ltogether relaxed and flaccid. On what do these markable differenees depend? Aceording to Janson, s quoted by Ollivier, paralysis of the limbs, without ontraction, is owing to inflammation of the nervous ructure alone, whilst the contraction depends on its omplication with inflammation of the membranes. n attentive observation of the progress of different ases, and of the influence of inflammation upon these nd other structures, will afford a satisfactory rationale f the phenomena. Contraction of the limbs, and rigidity the muscles, exist either constantly or with remisons during the active stage of inflammation; and is state will last longer when the force of the inflamation is directed rather upon the meninges than upon e proper substance of the medulla. In these it opeates as an irritative influence upon its surface; but hen the inflammation seizes the substance of the edulla itself, if unchecked it soon produces a softening f it, and then paralysis follows as the result of its disrganization.]

[3. We can, as is pointed out in the text, indicate lmost the very spot in which the inflammation is seated; nd those distinct groups of symptoms, enumerated as haracteristic of the lesions of the different regions of he medulla spinalis, are readily explicable by considerng the destinations of the nerves that arise respectively om them. But it is not sufficient to consider merely eir destination; we must take into account their funcons also. And here we find how the improved physiology and pathology of the present day can mutually ssist and enlighten each other. When the researches f Sir Charles Bell had demonstrated that the anterior oots of the spinal nerves preside over motion, and the osterior over sensibility, it became evident that the erangement or loss of these functions must follow a sion of those roots, or of the part of the medulla from hich they arise. Ollivier reports a very remarkable

case, which clearly proves the correctness of this inference. This individual, an old soldier, had been for some years taciturn and indolent, remaining constantly in bed, from finding an inability to get out of it. His gait was tottering, his lower extremities weak, both being equally affected. These symptoms increased until he ultimately became confined altogether to his bed, in which he lay with his thighs flexed towards the pelvis, and his legs on his thighs, without being able to extend or move them in the least degree. Still these parts retained *their natural sensibility, as was evident on pricking or pinching* them. The excretions were passed involuntarily; the voice and intellectual faculties were lost. After death the corpora pyramidalia and olivaria were found softened, and converted into a greyish, diffluent pulp, which alteration extended along the whole of the anterior part of the medulla,—almost to the lumbar region. The "ramollissement" could also be traced upwards into the brain, through the commissure of the cerebellum, the crura cerebri, the thalami, and corpora striata, even to some of the convolutions, particularly towards the middle of the anterior lobe. None of the other parts of the brain or cerebellum presented any sensible change, and the posterior part of the medulla, as well as the other membranes investing it, were perfectly healthy.]

[†. Mr. Pott has endeavoured to draw a line of distinction between paralysis and that disease of the spine which he has so well described, and which is usually called Pott's curvature. "It is (as he says) attended with loss, more or less complete, of the power of using the legs, and was formerly called a palsy, and treated as a paralytic affection, *to which it is in almost every respect perfectly unlike.* In the true paralysis (to use his own words), from whatever cause, the muscles of the affected limb are soft, flabby, unresisting, and incapable of being put into a tonic state; the limb itself may be placed in any position; if it be lifted up, and then let go, it falls down, and it is not in the power of the patient to prevent or retard its fall; the joints are perfectly moveable in

very direction. If the affection be of the lower limbs, either the hips, knees, nor ankles, have any degree of rigidity or stiffness, but permit the limb to be twisted in any direction."

"In the present case (viz. the disease of the spine) the muscles are lessened, but they are rigid, and always in a tonic state, by which the knees and ankles acquire a stiffness not easy to be overcome. By means of this stiffness, mixed with a kind of spasm, the legs of the patient are kept constantly stretched and straight, in which case either considerable force is required to bend the knees, or they are, by the action of the stronger muscles, drawn across each other in such a manner as to require a strong force to separate them. These (he proceeds to say) are strong marks of the distinction which ought to be made between the two diseases, and fully sufficient to show the impropriety of confounding them."

Though this diagnosis is supported by such high authority as that of Mr. Pott, yet, I believe, it cannot now be admitted. The description of paralysis is altogether incomplete, as it takes in only one stage of it, viz., the second, in which the disease is fully established, omitting the primary one, which is marked by spasm and tonic contractions of the muscles, if it be the result of inflammation; or by sudden loss of sensation and motion, if it be produced by an apoplectic attack. On the contrary, the description of the disease of the spine extends only to the first stage of it, during "which the muscles are rigid and in a tonic state, the knees stiff," &c. &c. omitting any notice of that condition which must supervene if the disease goes on unchecked, and in which the paralysis is just as complete as when the disease occurs primarily in the medulla. The difference between the two diseases seems to be, that in the one case it begins in the medulla or its membranes, in the other it commences in the bones; and before spasm, contraction, or paralysis of the muscles can be induced,

the medulla or its membranes must be affected; for there evidently is no direct connexion between the bones of the vertebræ and muscles of the extremities; the communication between them is established in disease, as well as in health, only through the medium of the nervous system. The principle of counter-irritation, when applied to the treatment of caries of the vertebræ, according to the plan laid down by Pott, is, doubtless, a good one, at least it has the sanction of experience; but should it be persisted in (even to the exclusion of the usual means of subduing irritation and inflammation), after the appearance of symptoms denoting a lesion of the medulla or its membranes?

[Serous effusions take place within the spinal canal as well as in the skull, and they may be situated outside the dura mater, which is a very rare occurrence, or within it, or under the arachnoid which invests the cord. Dr. Abercrombie gives one case which occurred in his own practice, and another from Ollivier, in which, on laying open the spinal canal, a considerable quantity of sanious fluid was found "between the canal of the vertebræ and the cord." The substance of the cord was a little softened, and under the arachnoid there was some bloody fluid; "but the effusion on the outside of the dura mater was fairly to be considered as a distinct disease." The tubular investment formed by the dura mater is not in close apposition with the substance of the cord. There is even in health some serous fluid, which in different cases, and under various disturbances which precede death, becomes considerably increased.]

[Extravasation of blood also occurs within the spine as within the head, being caused sometimes, as in young children, by falls, or in adults by various injuries, or even by making violent efforts. But in some instances, in which no such accident has occurred, persons have been seized with pain in the back, spasmodic contractions of the muscles, and convulsions, which may soon terminate in death. In a few of these which are

ecorded the brain was found healthy, but upon the
nedulla spinalis there was an effusion of blood at one
r more points, and of variable extent.]

[The membranes of the cord may become thickened
nd indurated, like those of the brain, and from like
auses, generally from injuries inducing an active con-
estion in the part. Fungous growths may also arise
pon the dura mater in this part, producing pressure
nd paralysis.]

[The substance of the cord may become much firmer
i its texture than is natural; this is a result of active
ongestion or a slow chronic inflammation—a sub-
nflammation.]

DISEASES

OF THE

AIR-TUBES, LUNGS, & HEART.

AFFECTIONS OF THE AIR-TUBES.

ANGINA LARYNGEA.—*(Inflammation of the lining membrane of the larynx.)*

453. *Symptoms.*—Pain in the region of the larynx, increased by pressure, by the action of deglutition, coughing, or speaking. The stethoscope indicates the presence of the "râle muqueux;" and as this depends on the fluid in the trachea, it is evident in proportion as that fluid is more abundant and less tenacious, the air-bubbles being evolved with greater or less facility according to its degree of consistence. The voice is sensibly altered, becomes hoarse, frequent cough, increased by speaking, which also becomes hoarse, painful, suffocating, and is accompanied by an expectoration, the product of which is variable, sometimes consisting of mucus, sometimes of pus, or of a mixture of both.

454. *Anatomical Characters.*—The mucous membrane lining the larynx, and particularly the glottis and epiglottis, is red and injected; which appearance is either in spots, or diffused to a greater or less extent. It is also somewhat swollen, and on its surface is effused a viscid or puriform fluid. When the disease has continued for any length of time the redness disappears, and the membrane acquires an increase of thickness:

small ulcerations are occasionally in this case observable upon it, particularly at the sides of the glottis.

TRACHITIS.—*(Inflammation of the lining membrane of the trachea.)*

455. *Symptoms.*—Pain in the inferior part of the neck below the larynx, extending downwards behind the sternum; this is increased by pressure and by inspiration, and is accompanied by a mucous rattle, such as occurs in laryngitis, which is perceptible in the trachea but not in the lungs, or even at the root of the bronchi: the voice is but little altered except at intervals, when the mucus secreted in the trachea becomes accumulated in the larynx; but this hoarseness of the voice ceases after expectoration.

456. *Anatomical Characters.*—Redness of the mucous membrane, which is covered with a viscid or purulent fluid, and if the affection has passed into the chronic form, the membrane usually presents several small spots of ulceration, always less numerous than in the larynx. In some cases the ulceration extends so as to perforate the walls of the trachea.

CROUP.

457. *Symptoms.*—In this disease there is a combination of the symptoms of the two preceding affections, together with spasm of the glottis, accompanied by a peculiar alteration of the voice, and a cough which comes on in fits, the intervals between which diminish as the disease advances; the dyspnœa is extreme, the respiration sibilant. This disease, which usually attacks children, and occasionally adults, sometimes begins with a slight cough, attended with pain, though not very acute, of the larynx or trachea; to this sometimes is added a tracheal mucous "rattle:" at other times, however, it sets in suddenly, without any perceptible premonitory symptoms; the patient, in many instances, is awakened during the night by a severe fit of coughing, which is at first dry, but is soon followed by the expec-

toration of a viscid fluid, sometimes puriform, or combined with flocculi of an albuminous substance. The cough may be either acute and shrill, like the crowing of a young cock, or may be hoarse, low, and deep; the voice too becomes hoarse, particularly when the inflammation approaches the glottis; the inspiration is sibilant, in consequence of the spasm at the glottis, and is always heard at a considerable distance. The little patient experiences a severe constriction in the throat; frequently raises his hands towards his neck; the face becomes swollen, and presents the appearance of considerable congestion; the dyspnœa increases in intensity.

458. Still the symptoms may diminish, and a remission supervene, but the cough retains its peculiar character, and the voice its hoarseness; a second attack, more violent than the first, comes on, and induces fits of coughing attended by an expectoration, either of a mucous or purulent fluid, or of portions of false membrane, or even of membranous tubes of a form perfectly cylindrical, the removal of which in general gives some momentary relief.

459. When the expectoration consists of a viscid mucus, we can distinguish a "râle muqueux," with an easy disengagement of the air bubbles: if the expectoration be puriform, the "râle sibilant" is perceived, giving a sensation which announces the presence, in the larynx and trachea, of a more thick and viscid fluid. When false membranes are being expectorated, there is no "râle," but we can distinguish a sound similar to that of the valve or clapper of a pump, which is audible only at intervals, when the false membrane is partially detached by the passage of the air through the larynx. If this sound is perceived during inspiration, it indicates that the membrane is detached at its superior extremity, but if during expiration, then the detachment must have occurred at the inferior one.

459*. Finally, the hoarseness of the voice and the dyspnœa increase as the inflammation proceeds, some-

imes complete aphonia takes place, but is removed nomentarily by expectoration; the fits become more nd more violent, and occur at shorter intervals; tho ough becomes more frequent as the consistence of the xpectorated matter diminishes, and death, if the ter-nination be fatal, soon closes the scene.

460. The diseases with which croup may be con-ounded are simple laryngitis, suffocating catarrh, and edema of the glottis.

461. *Anatomical Characters.*—The mucous membrane ining the larynx, upper part of the trachea, and some-imes even the larger divisions of the bronchi, exhibits a reater or less degree of redness, which disappears ra-her suddenly: it is sometimes covered by a false mem-rane, of a pale yellow or greyish colour, the thickness f which depends on the intensity and extent of the in-lammation. This production lines the inner surface of he larynx and trachea, and commencement of the ronchi; it is either moulded into a tubular form, or ppears in detached portions, blended with mucus, or locculi of albuminous matter. It is sometimes sepa-ated from the mucous membrane by a viscid or puri-orm fluid; at others it adheres more or less intimately, ccording to the degree of the inflammation, and also s its seat is nearer to the glottis. When the disease as been of short duration, the false membrane is usu-lly confined to the trachea. The redness of the mucous nembrane and tumefaction of its follicles are consider-ble. In several cases, the under surface of the epi-lottis becomes coated by the false membrane, and the ima glottidis is obstructed by it, or by the purulent mat-er which frequently occurs in place of it. Finally, cases ave occurred in which the mucous membrane of the air-ubes was covered merely by a viscid fluid, or by pus, and till death took place as speedily, and with precisely he same symptoms, as mark the progress of the disease n those in whom the false membranes really existed. To such cases the term *false croup* is applied. [I had n opportunity of seeing an instance of this whilst at-

tending the clinical lectures and practice of M. Guersent, in the "Hôpitals des Enfans Malades," during the summer of 1825. The patient presented all the usual symptoms of croup; and after its death we went to the bed-room, expecting to see the usual attendant on this disease, viz. a false membrane in the larynx: the result of the examination, however, verified the remark just made; for the lining membrane presented no other alteration than what may be found in common catarrh—a slight redness, with a viscid mucus on its surface. Those who die of croup generally exhibit a high degree of congestion of the lungs, and also of the vessels of the brain.]

ŒDEMA OF THE GLOTTIS.—*(Swelling and Congestion of the mucous membrane round the glottis.)*

462. *Symptoms.*—Pain, or a feeling of uneasiness at the upper part of the larynx, giving to the patient the sensation as if a foreign body were lodged there: this impression is so decided that he fancies the body is moved during deglutition, and changes its place, so as to occupy the aperture of the glottis, or one of its sides, during expiration. From the commencement of the disease respiration is performed with extreme difficulty, recurring by fits, which threaten instant suffocation: inspiration is sonorous or sibilant, expiration *free and easy*. The voice is hoarse, and somewhat weakened, occasionally altogether suppressed. If the finger can be carried along the tongue, as far as the upper extremity of the larynx, a soft tumour may be felt about the margin of the aperture of the glottis. The severity of the symptoms gradually increases, and the patient generally dies rather suddenly.

[Cases have occurred in which tracheotomy has been resorted to, for the removal of foreign bodies supposed to be lodged in the larynx or trachea; but in some of them nothing of the kind could be discovered, even after the most careful examination. It would appear that

uch a mistake may occur from the close resemblance hat exists between the symptoms of œdema of the glot-s, and those caused by the presence of a foreign body. t should always be borne in mind that expiration is omparatively free and easy in œdema; but in cases of oreign bodies in the trachea both inspiration and expi-ation are sibilant and difficult.]

463. *The diseases with which it may be confounded* are roup, or suffocating catarrh.

464. *Anatomical Characters.*—The margins of the lottis are thickened and swollen, forming a tumour of reater or less size, caused by a serous, or still more rely, a sero-purulent infiltration of the sub-mucous ellular tissue, but without any constant redness of the ucous membrane. A similar turgescence is sometimes ound on the inner surface of the larynx, which some-mes resembles phlyctenæ caused by the application f a blister to the skin. The epiglottis occasionally resents the same appearance. We also in some cases ud chronic alterations of different descriptions in the rynx.

CATARRH. (*Suffocating.*)

465. *Symptoms.*—The attack comes on very sudddenly, ften during the night, attended by considerable diffi-ulty of respiration, threatening of suffocation, a sensa-on of compression of the thorax, and cough more or ss painful: to this state a remission generally suc-eds, which is soon followed by a more violent attack, hich is in general fatal.

466. *Its Anatomical Characters* are unknown.

467. *The diseases with which it may be confounded* are roup, asthma, and œdema of the glottis.

PULMONARY CATARRH.

468. [Catarrh, considered as an inflammation of the ulmonary mucous membrane, is divisible into two ages, the acute and chronic. Its degrees of intensity ary from the slightest cough to such a derangement as

makes it resemble phthisis in almost every particular. It begins with irritation in the throat and dry cough; but after an interval, which varies according to the constitution of the individual, or the treatment resorted to, each fit of coughing is followed by the expectoration of a clear, transparent, glairy mucosity, somewhat similar to the white of egg; the greater the degree of inflammation in the mucous membrane, the greater is the viscidity and tenacity of its secretion. When the patient is seized with violent fits of coughing, accompanied by a sense of heat in the interior of the chest, by general anxiety and oppression, the expectorated matter acquires a degree of viscidity somewhat approaching the glutinous sputa of acute pneumonia.

In the midst of this transparent matter we sometimes find several small particles of a dull white colour, which have been frequently mistaken for portions of pulmonary tubercle, and therefore indicative of phthisis. They do not, however, come from the lungs;—they seem to be secreted in the mucous cryptæ of the pharynx and fauces. If there be any doubt as to the nature and origin of these substances, it can be readily satisfied by placing some of them on a piece of paper, and exposing them to heat. If they are merely sebaceous matter from the mucous cryptæ in the fauces and pharynx, they will leave on the paper a greasy stain, which effect will not be produced if they are tubercular matter from the lungs. Whilst the expectoration presents these appearances, the symptoms of bronchial irritation remain unabated; but according as this tends to resolution, the sputa progressively change their character: the mucosity of which they consist by degrees loses its transparency, becomes mixed with opaque yellow, white, or greenish masses, which, at first few in number, gradually increase, and ultimately constitute the whole of the expectorated matter. This change is generally accompanied by a perceptible remission of the symptoms of the acute affection, indicative of its resolution.

When the disease, instead of thus terminating, passes

ito the chronic form, the sputa retain the same appearnce as in the latter period of the acute stage. They re opaque, white, yellow, or greenish; they sometmes adhere to the bottom of the vessel, at others they oat in a transparent mucosity, or are suspended in the nidst of it. They are generally inodorous, and to the atient insipid; and in most cases expectorated without ifficulty.

469. Thus the expectoration resembles what is very ommonly observed in phthisis; the respiration too is hort and frequent; there may be night sweats, and a onsiderable degree of marasmus. Under such circumtances, none of the ordinary modes of examination are ufficient to distinguish chronic catarrh from phthisis; he stethoscope alone can furnish signs really pathognoic; and these vary according as the catarrh is dry or umid. In the former, there is a feebleness, or even otal absence of the respiratory murmur, in parts of reater or less extent, of the affected lung. This, howver, is not constant—it changes almost incessantly, o that the respiration becomes distinct in the parts vhere it had but a moment before been inaudible, and eases to be heard where before it had been distinct. These effects are produced by the altered bronchial seretion momentarily stopping up the air-tubes in some places; and of course they cease when the impediment s removed. This state of the respiration is accompaied by the "râle sonore" and "rale sibilant:" the ormer is little liable to change its seat; the latter, on the contrary, is very variable. It disappears for a while, probably after an effort of coughing, then suddenly returns with the same intensity as ever. Sometimes, however, both are constant, strongly marked, and occupy the greater part of the organ, which indicates that the affection is extensive and violent. It may be here observed, that the "râle sonore" is permanent in its duration, because it depends on a change of structure either in the bronchi or their lining membrane; the "râle sibilant" is variable, because it de-

pends on the presence of a viscid secretion plugging up the bronchial tubes, which is constantly liable to be displaced or expectorated.]

470. Acute catarrh may be confounded with emphysema of the lung, and with croup; chronic catarrh presents several of the characters of phthisis.

471. *Anatomical Characters.*—[On opening the body of a patient who has died of any affection during the course of which he had been attacked by acute catarrh, the mucous membrane is found red to a greater or less extent. This most usually occurs towards the end of the trachea, and in the first division of the bronchi. In very severe cases it may be found even in the smallest ramifications. If it is confined to the bronchi of one lobe, it is rather remarkable that those of the superior lobe are most constantly affected. In some cases the membrane seems as if finely injected; in others there is no appearance of vessels; we see merely a number of small red points aggregated closely together. Finally, the redness may be confined to particular spots, of various forms, constituting so many distinct inflammations, between which the membrane is white and healthy.

This bright redness disappears in chronic cases, and is replaced by a livid, violet, or brownish tinge; but this is not an invariable occurrence. Bayle and Andral report cases of inveterate chronic bronchitis, with puriform expectoration, in which the membrane scarcely presented any trace of redness: in some instances it was perfectly pale in its entire extent. The small bronchial tubes, particularly those towards the summit of the lungs, are occasionally found dilated in some parts, so as to be considerably larger than in the rest of their trajet, which may increase to such an extent as to emit a real pectoriloquy.—*See Andral*, vol. ii. p. 29.]

HOOPING-COUGH.

472. *Symptoms.*—This affection, which is peculiar to infancy, and sometimes epidemic, commences usually with symptoms of catarrh, either of the lungs or larynx.

hich last for about fifteen days; the cough then becomes onvulsive, and recurs by fits at variable intervals. hese are attended with violent efforts, and consist of ne long sonorous inspiration, followed by several rapid, uick expirations: there is, at the same time, conges- on of the face, together with a sensation of suffocation nd constriction, more or less intense. To this suc- eeds a vomiting of large quantities of mucous matter, nd an expectoration which is thin, transparent, and ascid at the commencement, but afterwards becomes uick and opaque; finally a complete remission takes lace, with every appearance of perfect health. The uration of this affection is variable.

473. It may for a short time be taken for croup, or uffocating catarrh, in children.

474. *Anatomical Characters.*—Pathology has not as yet hrown any light on the causes of this complaint. In ital cases it is usual to find an inflammation of the mucous membrane lining the larynx, trachea, or bronchi, nd sometimes even some ulcerations.

PLEURODYNIA.

475. *Symptoms.*—Pain in one side of the chest, with mmobility of the ribs during respiration, which also be- omes more or less incomplete. The murmur of re- piration is weak, or altogether inaudible, in some parts f the thorax; percussion gives a dull sound; inspira- ion and pressure on the mu-cles cause pain. There is o trace of any of the phenomena peculiar to other dis- ases of the chest, such as œgophony, pectoriloquy, ále, &c. &c.

476. Its anatomical characters are unknown.

477. It may be confounded with pleuritis.

ŒDEMA OF THE LUNGS.

478. *Symptoms.*—This affection, which is seldom idio- pathic, usually supervenes either with other diseases, at the close of fevers of long duration, or of organic diseases, particularly those of the heart. The respira-

tion is laborious and difficult; the respiratory murmur is scarcely perceptible, though the thorax is largely expanded; there is a slight "râle crepitant," particularly at the base and inferior part of the lungs. The sound on percussion is clear, and on both sides equally so; the cough is followed by an aqueous expectoration. In some cases the respiration becomes "puerile" in a small part of the summit of the lung. This affection is sometimes complicated with pneumonia, or with emphysema, in which case its diagnosis is very difficult. The nature of the "râle," and the general symptoms, alone can distinguish it from catarrh.

479. *The diseases with which it may be confounded* are pneumonia and catarrh.

480. *Anatomical Characters.*—The tissue of the lung, of a pale greyish colour, is more dense and heavy than in the natural state; it is crepitant, and collapses only when, by compression, it is freed from the liquid that is infiltrated into it; the lung seems to contain very little blood, but is gorged with a colourless, transparent, frothy serosity; the air-cells retain their natural texture.

INFLAMMATION OF THE LUNGS.—PNEUMONIA.

481. [Laennec has established three periods or stages of this disease, each characterised by a distinct group of symptoms. In the first, the respiration is difficult, accelerated, laborious, becomes also unequal and imperfect, and so bears no proportion to the dilatation of the walls of the thorax. When both sides are affected, it becomes abdominal, the ribs over the affected part are unmoved; occasionally there is a dull pain in some part of the chest, but this is by no means a constant occurrence, except when the disease is complicated with pleuritis. On percussion the chest sometimes sounds as in health, but most commonly its resonance is rendered dull, or lost altogether in a greater or less extent, always, however, limited to that of the affected part of the lung.

When we examine the respiration in those parts in which the resonance is altered, we find it feeble, scarcely perceptible, or altogether masked by "*a râle crepitant*," which indicates both the nature and extent of the alteration. The respiration becomes "puerile" in the parts that remain unaffected, and sometimes also in the other lung. These phenomena soon change, either by the resolution of the disease, or by its making further progress. In the former case the "râle crepitant" diminishes in extent and intensity; the murmur of respiration approaches its natural state; the sound of the chest becomes less dull, and its movements more regular; and finally, a "râle muqueux" is audible, which indicates the change of the expectoration, and approach of convalescence. But if, on the contrary, the disease proceeds unabated; the alterations in the movements of the thorax still continue; the sound becomes altogether dull, the "râle crepitant" ceases, for the lung is no longer permeable to the air; there is a total absence of the murmur of respiration, except in some points corresponding to the large bronchi, in which the respiration becomes cavernous, and the voice resounds, so as frequently to produce a real bronchophony. The expectoration is more or less difficult, the sputa are white, slightly yellowish, or semi-transparent, and so viscid as to adhere firmly to the vessel even when inverted: they contain some bubbles of air, and present some striæ of pure blood, or are so intimately blended with it, as to exhibit a dusky or perfectly red colour.

482. If the disease occupy but a small part of the lung, it may still end in resolution. It will then be found to retrace its steps, as it were, and go back through the very same stages by which it had ascended. But if, on the contrary, it still advances, a purulent effusion takes place into the affected part of the lung, the movements of the chest become more restricted, weak, and difficult; symptoms of general debility supervene—a peculiar "râle muqueux" is heard, at first in some points, then in the whole of the affected

part. This soon degenerates into a gurgling sound, indicating that the pus is collected into a mass or cavity, from which it escapes by the neighbouring bronchi; and so, a real pectoriloqny is established by means of this communication between the cavity and the air-tubes.

As each stage of this complaint exhibits a distinct set of symptoms, we can seldom be in error as to its character or extent, if we have an opportunity of following it from its commencement to its termination. But if we are called in after the second period is established, we experience much difficulty in deciding what the complaint really is. Thus, we find the sound dull, the respiration suppressed, and the ribs immoveable; but are not these common to empyema and hydrothorax, as well as this stage of pneumonia? The previous history can alone establish the distinction.

Again, in the third stage, the respiration is cavernous; a gurgling sound is heard in the part, together with pectoriloquy, which constitute the leading characters of phthisis. How, then, are they distinguishable? The previous history, and the nature of the expectoration, must be our chief guides.

483. From pulmonary apoplexy it is distinguished by percussion, and the examination of the movements of the thorax, which furnish us in general with sufficient data for establishing the diagnosis. The respiration is always complete in apoplexy, but, in most cases, incomplete in pneumonia. In the first degree of the latter, while the "râle crepitant" exists, the sound is obscure or dull, but remains clear in the first degree of the apoplexy; the "râle" is rarely diffused in pneumonia; it usually is diffused in the other affection.

What is the part of the lung chiefly affected in pneumonia? Is it the cellular tissue between the cells, or rather the air-cells themselves? As yet we cannot affirm any thing with positive certainty; we may state what appears probable.

Whilst the inflammation is incipient, we recognize

during life by the existence of the "râle crepitant." Now this "râle" seems to be but the diminutive, as it were, of the "râle muqueux," and if it is quite certain that the latter is seated in the bronchi, we can scarcely hesitate to admit that a mixture of air and fluid in the bronchi of the smallest size produces the "râle crepitant;" but the pulmonary cells are nothing but the ultimate terminations of the bronchi expanded into the form of culs-de-sac. These cells, then, are the seat of the "râle crepitant," in the first stage of pneumonia. If this reasoning be correct, it follows that this disease consists essentially in an inflammation of the air-cells, whose inner surface secretes a fluid at first muco-sanguinolent, and afterwards purulent.

As the inflammation advances, the fluid becomes more thick and viscid; it can no longer be expelled from the vesicles in which it is formed; it accumulates, obstructs, and distends them; and so gives rise to those granulations which give to the lung its hepatized appearance in the second degree of pneumonia. At a later period it is not mucus or blood that is poured out; it is pus, which in its turn fills the air-cells, and so constitutes the grey granulations which characterize this first stage, or "hepatization grise." If a portion of a lung in this state be pressed, we see the pus escaping in the form of drops, each seeming to come from the air-cell in which it had been contained. If the distention of the cells be general, and carried to a great degree, they burst, their contents become blended, and so the granular appearance is lost.]

The walls of the vesicles become soft and friable, as all tissues do when inflamed. Hence the remarkable softening of the substance of the lung in pneumonia.—*See Andral*, vol. ii. p. 313.]

484. *Anatomical Characters.*—[In the first stage of pneumonia the substance of the lung presents an increase of weight and density,; it is infiltrated with a frothy, sanguineous serosity, in considerrble quantity; it still crepitates on pressure, and its areolar texture

can be recognized; the external surface is a deep violet, the interior is more or less deeply red. In the second stage, or that of "hepatization rouge," it no longer crepitates on pressure. It presents the heaviness, appearance, and density of the liver; its texture seems granular when torn: its external surface is not so much of a violet colour as in the preceding degree; the internal is red, and presents some white spots, caused by the pulmonary cells and vessels; these are occasionally mixed with black spots, similar to those observed on the surface of granite. The sanguineous serosity with which it is infiltrated is diminished in quantity, and does not trickle out when a section is made. In the third stage, or that of "hepatization grise," the interior of the lung becomes of a pale yellow tinge: its granular aspect becomes even still more manifest; a purulent fluid issues from it on incision, which may be collected by the scalpel; lastly, the pus infiltered into the substance of the lung may unite in some points, and then gradually increase, so as to present the appearance of abscesses, the walls of which exhibit no trace of false membranes: on the contrary, they are softened and broken down, so that not a trace of their original structure remains.]

[The resolution of pneumonia, and of several acute affections, has been frequently observed to be accompanied by a certain change in the secretions and excretions—which change has been usually denominated a crisis (*judgment or decision*), as indicating the termination of the disease; and as many individuals, at different times, have observed that diseases evinced a tendency to terminate by a crisis on some particular days rather than others, these days have been called critical (*judicatorii dies*). The doctrine of crises, as stated in the works of Hippocrates and his commentators, seems to have been deduced from observation and the records of cases kept by himself and his predecessors: yet objections have been constantly raised against it, partly on the alleged grounds of its having been founded on the

Pythagorean doctrine of numbers, and partly because these objectors (to use their own phrase) "*cannot see*" why diseases should be disposed to terminate on one day rather than on another. To such an objection it may at once be replied, that most of the natural functions and actions of the system evince a tendency to observe fixed periods. Thus, during the evolution of the fœtus, the periods of quickening and birth take place at assignable intervals from the moment of conception; and after birth, when the animal is enabled to maintain an independent existence, it presents, during its progress through life, the periods of dentition, puberty, and the critical age, (as it is called), each marked by distinct characters, and liable to a peculiar train of diseases. In all the diseases included within the class Exanthemata, the appearance of the eruption, its maturation, and desiccation, take place at fixed intervals from the time of infection; and even when there is nothing that can be deemed specific in the nature of the disease, this same tendency is observable; for instance, in hectic fever (that remarkable sympathy of the system with a lesion of an important organ), the cold and hot stage, the morning and evening exacerbations, observe their stated order of succession. These considerations may be sufficient to dispose the mind to admit the probability of the doctrine of crises, but mere *à priori* reasoning cannot establish its truth; that can only be done by an appeal to facts, to observation, and the records of cases. These remarks may seem misplaced, when added in the form of a note to the section on Pneumonia, but there is no disease in which the question can be more readily tried; for the periods of its commencement and termination are generally well marked. Audral (vol. ii. p. 5) has given a tabular view of 122 cases of pneumonia, which had been treated in "La Charité;" of these it appears that 23 lasted 7 days—13 lasted 11—11 lasted 9 days—and 9, 20 days. So far, then, we perceive that pneumonia evinces a tendency to terminate on the 7, 11th, 14th, and 20th days, which may be esteemed critical in this disease.]

INFLAMMATION OF THE PLEURA—PLEURITIS.

485. *Symptoms.*—At the commencement of the disease, before any false membranes are formed, or fluid effused, an acute pain occurs in some part of the chest, together with immobility of the ribs, particularly those corresponding to the seat of the affection; respiration is frequent (especially if both sides are affected at the same time), painful, hurried, quick during inspiration, and slow in expiration; percussion is painful; in other respects it gives the same results as during health. The respiratory murmur is weakened, but not altered in character, except the disease be complicated.

When an effusion takes place to a moderate extent, the sound becomes dull in the lower part of the thorax, both laterally and posteriorly. This effect may also be produced in any other part of the cavity in which the effusion shall have become circumscribed by bands of adhesion left by a former pleurisy.

When the stethoscope is applied along the posterior border of the scapula, towards its inferior angle, or opposite any point to which the effusion may have extended, we perceive, when the patient is desired to speak, the diminutive, as it were, of his voice—sharp, thin, and tremulous, to which Laennec has applied the term ægophony.

When the effusion is very considerable from the commencement, or becomes so during the progress of the disease, the sound is altogether dull, the ægophony disappears, and the respiration is no longer heard, unless where old adhesions retain some part of the lung near the ribs, and prevent it from being forced back by the effusion. The intercostal spaces become enlarged and elevated; the affected side is more expanded than the sound one, but is no longer influenced by respiration; its immobility forming a striking contrast with the great mobility of the other, in which the respiratory murmur is increased in intensity, so much so as to assume the "puerile" character.

When the disease begins to decline, and the fluid be-

omes absorbed, so that its quantity is reduced to the
roportion necessary for the production of the pheno-
nenon, the ægophony recurs for a while, but gradually
iminishes as the effusion is lessened, and ultimately
isappears altogether when its absorption is complete.
till the sound given by percussion remains dull for a
onsiderable time, and the respiration weak or imper-
eptible ; which effects continue in a greater or less
egree until the adhesions of the pleura are converted
nto cellular bands, or into a structure similar to fibro-
artilage. Then the intercostal spaces become con-
acted, the ribs are made to sink inwards, the thorax
ecomes narrowed, and the affected side never again
esumes its former dimensions or mobility. The diseases
itb which it may be confounded are hydro-thorax,
ironic pneumonia, or phthisis.

486. While the ægophony exists, there is no possibi-
ty of mistaking pleuritis for any other disease, except
ydro-thorax, as that phenomenon is altogether peculiar
these two affections : tbe other local and general
mptoms of each must be taken into account, in order
establish the diagnosis. But when the effusion is
undant. or the disease has passed into the chronic
rm, if we have not observed it from the beginning, we
ay mistake it for hydro-thorax, or chronic pneumonia ;
, on the other hand, these affections for pleurisy.
owever, the previous history, together with the gene-
l symptoms, will enable us to distinguish them.—
ere seems no probability of its being confounded with
thisis.

487. *Anatomical Characters.*—The inflamed membrane
esents a great number of red points, which, though
uated under the pleura, are visible through its sub-
nce. The spaces between them retain their natural
lour ; sometimes the membrane is injected, but is
rely ever thickened. The inflammation always de-
mines the effusion of a serous, transparent, citron-
oured fluid (somewhat similar to unclarified whey),
taining some detached portions of the false mem-

branes, which are formed on the surface of the pleura. The extent of these is determined by that of the inflammation: if it be confined to the pleura costalis or pulmonalis, then the surface is covered with a layer of coagulable lymph, which is gradually converted into a false membrane; but if the pleura lining the wall of the thorax, and that covering the adjacent portion of the lung, be at the same time inflamed, then both are covered with layers of membrane, and become connected by transverse bands passing from one to the other, through the fluid which is effused between them. When these new structures become red, and traversed by vessels, the portion of the pleura subjacent to them becomes red also, and the effused fluid partakes of the same colour. The surface of the lung beneath the inflamed pleura usually remains unaffected, but is somewhat more dense and less crepitant than natural. When the effusion is considerable, the lung is compressed and flattened, and if the pleurisy becomes chronic, it may be forced back towards the vertebral column, and be reduced to the form of a membranous lamella, so as to be with difficulty discovered, and so induce a belief that it had been altogether destroyed.

In this chronic state the pleura is more red, and the false membranes more friable than in the acute form; the effusion also is more abundant, but less limpid, and is mixed with minute albuminous flocculi, which give it a puriform appearance.

If resolution and absorption of the fluid take place, the lung becomes distended with air, the false membranes contract adhesions, which are usually of a cellular structure, or sometimes that of fibro-cartilage; the membranes themselves present the same organization. It is during this process that the ribs approach each other, the chest becomes narrowed, and the affected side contracted. When the effusion is circumscribed, as happens when it is poured out amongst old adhesions closely united together, it may be mistaken for a cyst in the lung, particularly if it occurs in one of the in-

erlobular fissures. In such a case the lung, being ompressed against the vertebral column, renders the nistake still more likely to occur, as at first it may be upposed to have been altogether destroyed; but the rror is removed as soon as the false membrane is removed from the pleura.

488. Gangrene sometimes takes place in the pleura, presenting itself in the form of circumscribed spots of a dark brown or greenish colour, penetrating the substance of the membrane, and extending in some cases to the subjacent cellular tissue, or to the surface of the adjacent soft parts, which become infiltered by a serous fluid. If the gangrene be the result of an intense pleurisy, which is a very rare occurrence, the false membranes partake of the same state as the pleura, become softened, broken down, lose all consistence, and give out the peculiar odour of gangrene. If it be caused by the rupture of a gangrenous abscess of the lung, which pours its contents into the pleura, pleurisy, with formation of false membranes, first takes place, and then the gangrene supervenes consecutively. The walls of the thorax may sometimes be engaged in the disorganization, and an abscess, caused by the infiltration of the effused fluid, may burst externally.

HYDRO-THORAX.

489. *Symptoms.*—If the effusion be not very abundant, egophony is perceived in the same places as in pleuritis, and presents the same modifications. The sound of the chest is dull on percussion, and the respiration inaudible, except along the vertebral column.

490. The only disease with which hydro-thorax can be confounded is chronic pleurisy; hence the previous history, together with the absence of the symptoms of the latter, can only determine the diagnosis.

491. *Anatomical Characters.*—The cavity of the pleura contains an effusion, in most cases consisting of a citron-coloured serosity, transparent, and without any albuminous flocculi. The lung, void of air, is compressed

towards the mediastinum. But if, instead of serosity, the pleura exhales blood, then the membrane is studded with numerous small red points, and covered with blood in a semi-coagulated state.

EMPHYSEMA OF THE LUNGS.

492. *Symptoms.*—[This is one of the many diseases long confounded under the common name, *Asthma*. It is characterized by habitual dyspnœa, recurring by fits, which are exceedingly irregular in their periods of return and duration, and are subject to be increased by any cause, however slight, that affects the respiration. The movements of the thorax are irregular, and habitually unequal; inspiration is short, high, and rapid; but expiration is slow, incomplete, and as it were graduated; there is thus a manifest difference in the duration of the two movements. During the fits the respiration becomes convulsive. On percussion, the chest emits a sound more clear than in the healthy state, but this unnatural resonance is not given equally at all points, as the disease seldom extends to the whole lung. When the affection occurs at both sides, we experience much difficulty in estimating this increase of sound, as we have then no subject of comparison; and again, when only one side is affected, there is another source of error; we may mistake the sound side, as being less sonorous, for the diseased one; but this is soon rectified by auscultation.]

[There is a constant cough, returning in fits, usually dry, or accompanied by a viscid, transparent expectoration. When the emphysema is of long standing, and extensive, the intercostal spaces become expanded, and the thorax is rendered prominent, and rounded on one or both sides, according as the affection is single or double.]

[In all the points occupied by the emphysema the murmur of respiration is very weak, or altogether suppressed. During full inspirations, and sometimes during expiration, we hear a "*râle sibilant*," resembling

the sound of a small valve; or a "*râle sonore*," imitating the cooing of a dove. The contrast between this marked resonance of the thorax, with the feebleness or total absence of the respiratory murmur, constitutes the distinctive character of this disease.]

493. [The diseases with which emphysema may be confounded are—pulmonary catarrh, and pneumo-thorax, unaccompanied by effusion of fluid. From catarrh it may be distinguished by attention to the following circumstances. In catarrh the suspension of the respiration in any particular point is of short duration; and when it returns it is strong, and even "*puerile*;" a constant râle, sonore or sibilant, also accompanies it. In emphysema the suspension of respiration in a particular part may be long continued, and even permanent, and when it is restored the respiratory murmur always continues weak, particularly if the disease has lasted long. Further, in catarrh the movements of the ribs remain free, the respiration does not present a constant inequality, and the chest retains its natural sound and capacity. But in emphysema one side is more moveable than the other, inspiration is very short relatively to expiration, and the thorax becomes expanded, and acquires a tympanitic resonance.]

494. *Anatomical Characters.*—The pulmonary vesicles on the surface of the lung are distended; their size varies from that of a millet-seed to a nut. The partitions separating them are ruptured; hence the contained air is readily extravasated; the small bronchial ramifications of the affected part are also dilated. When the thorax is opened the lung does not collapse; on the contrary, it seems to extend beyond it, as if too large for its cavity, and if it be thrown into water it floats on the surface. The mucus which obstructs the bronchi is very viscid.

PULMONARY CONSUMPTION—PHTHISIS.

495. The physical signs of phthisis are those which characterize tubercles in their different forms and

states; but though these are of primary importance in clearing up the diagnosis of the complaint, in many cases they do not become decisive until it has made considerable progress; so that, in the earlier stages of the disease, we must be guided rather by the other phenomena which accompany it. The symptoms of phthisis are exceedingly variable; so is its duration: it may commence with a slight cough, not attributable to any particular cause, or may follow an acute disease, such as pneumonia; it may run its course in a month or two, or may be protracted to years. All the varieties which the disease presents may be included under the following heads—regular phthisis, irregular, latent, acute, and chronic.]

[The *regular* and ordinary form not unfrequently sets in with a slight dry cough, which may last for some weeks or months without much aggravation, or the addition of any new symptom. In other instances the cough may be severe from the commencement, and be accompanied by an expectoration of mucus, in greater or less quantity; or again, the patient having perceived merely some slight feelings of fulness or constriction in the chest, hæmoptysis may set in, and recur at intervals of variable duration, constituting the first indication (though by no means a decisive one) of this formidable malady. Even in this early stage some degree of languor is felt; the respiration becomes hurried on going up stairs, or making an effort; the pulse, too, is accelerated, and generally somewhat wiry and incompressible in its character.]

[After some time the cough and expectoration increase (the latter still resembling a frothy mucus), the constitution begins to sympathize with the local affection, and that peculiar fever is established so generally known as hectic fever. This resembles the remittent rather than the intermittent type, "for in the clearest remissions of the hectic there is still some quickness of the pulse, so as to beat at least ten strokes more in a minute than it should do in a healthy state." There

are generally two exacerbations in the course of twenty-four hours; one towards noon, which is slight; the other, commencing in the evening, terminates in the morning. In hectic, as in intermittent fevers, each fit consists of a cold, hot, and sweating stage; but though these are regular and constant in the latter, they present numerous varieties in the former, both in their relative duration and mode of invasion. Thus, as Heberden has remarked, the fits of hectic seldom continue to return in the same manner for more than three times successively: the shivering is sometimes succeeded by perspiration, without any intervening heat; sometimes the fit begins with heat, without any preceding cold; and even, occasionally, patients experience the usual chilliness without any following heat or sweat. A regular fit usually commences about five or six o'clock in the evening, with a sense of chilliness, which continues for an hour or little more; after this the skin becomes warm, and the pulse accelerated, some degree of thirst and general uneasiness being at the same time complained of. At ten or eleven o'clock a sweat breaks out, either generally or only on some parts, after which the patient gets some sleep; but still the sweating continues, so that, on waking at five or six in the morning, he finds himself bathed in perspiration. The pulse is always quick, being never below 100; generally varying from 110 to 120 or 130, and sometimes getting as high as 140.

It is generally observed, that in regular intermittents, the urine, during the fever, is pale and turbid (depositing a lateritious sediment) during the intervals; but in hectic it may be turbid during the fever, and clear in the intervals; or it may be pale during the exacerbation, and muddy afterwards; so that it appears to be governed by no fixed rule. The digestive functions not infrequently continue regular until the disease has made much progress; the muscular power, too, is by no means diminished in proportion to the degree of fever, as in other affections; it is but little affected

until emaciation and diarrhœa have set in. The head is little if at all affected, even in the worst cases, and the intellects continue unimpaired to the last. A slight delirium not unfrequently precedes death.

As to local pain, in cases of phthisis, it can only be stated that many experience little or none; some, however, complain of acute and darting pains at times, which appear to be caused by slight inflammations of the pleura or lungs, supervening at distant and variable intervals. When the sweats above noticed have continued for some little time, the patient grows thin and wastes, gradually passing into a state of complete emaciation. This is accelerated by the supervention of an additional evil, namely, a diarrhœa, which not unfrequently alternates with the sweating, the one ceasing as the other sets in. In females, the menses almost always cease when hectic fever is established, and occasionally even before that is the case, which has led to a popular opinion that the disease in such cases arises from the suppression. A knowledge of pathology, however, has enabled us to trace it to a far more efficient cause. The expectoration has been much attended to in phthisis, with a view to derive from it some pathognomic character of the disease, but no satisfactory result has as yet been arrived at. It contains three distinct materials, mixed in various proportions; namely, mucus, secreted along the bronchi; tubercular matter, more or less softened; and sometimes pus, secreted by the sides of the tubercular cavities after their contents have been evacuated. These cannot be distinguished, with any precision, by a consideration of their physical characters, nor by chemical analysis. It is quite true that pus is more opaque and fœtid, and less tenacious, than mucus secreted during a catarrh; but it is by no means uncommon to find puriform sputa expectorated in the chronic form of the latter complaint.]

496. [When hectic fever is established, the degree of emaciation which attends it will be found to keep pace with that of the evacuations above noticed, viz. the

sweats, diarrhœa, and expectoration. The cheeks become hollow and sunken, the nose appearing on that account more prominent than natural; the cheek bones also become prominent, and the skin (which elsewhere is of an unnatural paleness, with occasionally a tinge of dusky yellow,) presents, on the middle of the side face, a circumscribed patch of a bright, delicate red colour. This is called the hectic flush. It is not unfrequently observed to be more strongly marked on one side than on the other. The appearance of the eyes is also peculiar; the conjunctiva retains its natural clearness, but acquires a delicate pearl-blue tinge; the angles of the mouth are slightly retracted, giving to the countenance that peculiar appearance called *facies hippocratica*; the shoulders are elevated, and, as it were, pointed; the ribs prominent, and the intercostal spaces (particularly on the upper and fore-parts of the chest) depressed. The abdomen becomes flattened and retracted; the joints appear as if enlarged, in consequence of the diminution of the intervening parts of the limbs. Even the nails of the hands curve inwards towards their palmar aspect, owing to the diminution of the pulpy ends of the fingers: the hair falls off; so that every attendant circumstance denotes a diminution and decay of the vital powers.]

497. [Under the term *irregular phthisis*, Laennec includes all the cases in which tubercles begin to be developed in some other organ than the lungs. Thus they may commence in the intestines, or mesenteric glands. The disease sets in with some derangement of the digestive organs, not unfrequently with obstinate diarrhœa; after a while the abdomen becomes tumid and painful, marasmus supervenes, and all those symptoms which characterize *tabes mesenterica*.]

[Many cases occur in which the existence of tubercles in the lungs is not even suspected, until the disease has made considerable progress, having been considered during its commencement and course as depending on some other cause. Common catarrh may simulate all the known characters of phthisis, so as to be

scarcely distinguishable from it: and again, the catarrh which attends the development of tubercles may accurately resemble ordinary bronchitis, and be treated for it, until the tubercles become so considerable in number, or so large, as to determine a new set of symptoms. This, however, would lead to no ill consequence practically. When, more particularly in persons of a scrofulous habit, scorbutus or hepatitis become chronic, tubercles may be deposited to a considerable extent in the lungs without being suspected, the symptoms of the original disease in a manner masking that which is springing up, and even directing attention away from it. These are the cases which Laennec classifies under the head *latent phthisis*. The *acute* and *chronic* forms of the disease differ only in reference to their duration.]

498. [Phthisis has been considered by some persons as divisible into three periods. From this, (as must be evident from what has been already stated), it is not to be inferred that a disease, in many cases so obscure in its progress, and variable in its duration, conforms strictly to any such systematic division. Still it is useful to adopt it, chiefly for the purpose of facilitating the description of the physical signs and diagnosis of the complaint. During the first period, namely, that in which tubercles, in moderate number, begin to be developed in the substance of the lung, we cannot find, either by the examination of the local phenomena, or general symptoms, evidence of any other affection than a catarrh more or less severe; but if the tubercles be in considerable quantity, or are deposited in the infiltrated form, the sound given on percussion will be dull. In some instances its progress is, as it were, latent, and altogether escapes observation. However, there usually is some cough, which may be either hard and dry, or accompanied by an expectoration, similar to the saliva of the throat and fauces, which consists of a colourless, ropy, and somewhat frothy fluid, and in which we occasionally find suspended some black spots, and rounded flocculi.]

[In the second period the tubercles increase in num-

er and size, so as to compress and obstruct the substance of the lung to a certain extent; in which case they afford sufficient evidence to make us suspect their presence, but not to decide with positive assurance. Finally, in the third stage, the substance of the tubercles becomes softened, makes an opening for itself into some of the neighbouring bronchi, is evacuated, and so gives rise to the formation of a cavity, of greater or less extent, the existence of which is indicated by its characteristic symptom—pectoriloquy.]

[The movements of the chest are very variable during the progress of this complaint; so much so, that though they present almost every possible alternation, they can contribute little to its diagnosis.]

[In the second period we usually find that the summit of the affected side of the chest gives, on percussion, a sound more or less dull and obscure; and if the cylinder be applied on this part, a weakness, or total absence of the respiratory murmur, is found to exist; and the voice thrills with increased force under the instrument. These symptoms, however, do not become signs of the disease unless they are constant, and exist at one side only; for it is on the comparison of the sound with that of the affected side that their value depends.]

[After some time the sound returns, occasionally with even increased intensity; or, on the contrary, diminishes; and from having been obscure, becomes altogether dull. The pectoriloquy, doubtful at first, soon becomes perfectly manifest, and so continues, except the disease should increase so much as that the excavation becomes of unusually great extent, when something of distinctness is given to it. Whilst these changes are taking place, the catarrh increases from day to day, and extreme emaciation is produced.]

499. [If phthisis during its progress observed these regular periods in all cases, and exhibited this succession of phenomena, it would no longer be a disease difficult to be recognized. But how frequently does it not happen that patients die before the softening and

evacuation of the tubercular matter, or even before the tubercles have increased in number sufficient to alter the sound of the chest, or affect the distinctness of the respiration. The complaint with which phthisis is most liable to be confounded is chronic catarrh, from which it is distinguishable by the pectoriloquy, and other symptoms given above, as indicative of the development of tubercles. But the diagnosis is still rendered uncertain; for in catarrh a pectoriloquy may be produced by the dilatation of the bronchi, in which case, time, and the progress of the disease, can alone clear up the difficulty. From acute or chronic pneumonia occupying the superior lobe of the lung, it will be distinguished by the previous history, the expectoration, and general symptoms.]

500. *Anatomical Characters.*—[Tubercles, in their first stage, present themselves in the form of small semi-transparent granules of a greyish colour, or sometimes almost colourless and transparent, their size being usually about that of a millet-seed; whence the term *miliary tubercle*. As they increase they become yellow and opaque; at first in the centre, then gradually in their whole extent; some of those that are near to each other unite, form masses of a pale yellow colour, and of the consistence of cheese, in which state they are named *crude* tubercles.]

[In this, the second stage of their progress, it frequently happens that the substance of the lung, round the tubercles, hitherto healthy, becomes indurated, semi-transparent, or greyish, owing to a new production of tubercular matter, which becomes as it were infiltrated into the pulmonary tissue. However, it occasionally happens that masses of considerable size are formed by a similar process of infiltration, without the previous development of separate miliary tubercles. The part of the lung in which this deposition occurs is dense, humid, impermeable to the air, and when cut presents a smooth, polished surface. In some parts of this induration we generally observe several small yel-

ow granules, which mark its change into the second tage, or that of *crude tubercle.*]

[The process of softening commences, according to ome, at the centre of the mass; but it is more probably t the circumference, and is effected by imbibition of uids from the surrounding parts. Be that as it may, t progressively increases, until the consistence of the vhole is changed, when the matter, by opening for itself passage into some of the bronchial tubes, become evauated, and so leaves a true tubercular cavity. The interior of these cavities is sometimes crossed by bands, omposed of the substance of the lung, studded with ubercular matter still in a crude state, or in some .are cases by obliterated vessels, but never by any ronchial ramifications. As to the larger vessels, they re forced back and compressed by the progress of the umour, but not altogether obliterated; the small vessels nly suffer that change.]

[After the evacuation of their contents the internal urface of these cavities becomes lined by a soft, friable, alse membrane; or there is merely an exudation, vhich exists in some parts only, and presents variable legrees of thickness. If the exudation and false membrane should exist at the same time, then the latter is blaced beneath, and is found to be torn in some parts. Some cases have occurred in which these excavations were lined by semi-cartilaginous lamellæ, of a greyish white colour, semi-transparent, adherent to the substance of the lung, uniting by a progressive increase, nd so becoming continuous with the lining membrane of the bronchi. In some cases also the sides of these excavations have been found united by cellular adhesions, or by a structure similar to fibro-cartilage, which form a cicatrix, in which different structures may exist; such as chalky concretions, black bronchial matter, &c. Finally, the boundaries of the excavations may be formed by the substance of the lung having become red, hardened, or infiltrated with tubercular matter. Their form is more or less tortuous; their contents vary, sometimes consisting of a matter of the consistence of thick

pus, at others of a friable substance, swimming in a serous limpid fluid.]

[In some cases pulmonary tubercles are contained in cysts, semi-cartilaginous in their texture, firmly adherent to the substance of the lung by their external surface, but smooth and polished on their internal. This is most commonly found in the bronchial glands.]

HÆMOPTYSIS, OR SPITTING OF BLOOD.

501. *Symptoms.*—The attacks of this affection are always preceded by a titillation in the region of the trachea, larynx, or bronchi, according as the congestion exists in one or other of these points; there is also a sensation of heat and irritation in the chest, together with a cough, which is soon succeeded by an expectoration, consisting of frothy, red, vermilion-coloured blood, in greater or less quantity. The chest emits its natural sound on percussion; respiration continues unimpeded, but is accompanied by an abundant "râle muqueux," with large bubbles.

502. Hæmoptysis may be periodical, or supervene on the suppresion of an habitual sanguineous discharge. It can scarcely be confounded with hæmatemesis or epistaxis.

503. *Anatomical Characters.*—The mucous membrane lining the air-tubes is covered with blood, and presents on its surface a number of red points, but there is no trace of erosion or lesion of its texture.

PULMONARY APOPLEXY.

504. *Symptoms.*—This affection, which is generally very sudden in its invasion, is marked by intense dyspnœa, and sometimes even a threatening of suffocation. The movements of the thorax are hurried, unequal, intermittent; sometimes alternately full and contracted, as if convulsive, exhibiting the greatest possible irregularity; the patient seems as if suffocating, and every movement indicates the greatest anxiety.

At the commencement, the sound of the chest on

percussion is found very little, if at all, altered, but the murmur of respiration is decidedly changed. In some points of the lung, circumscribed and more or less numerous, we perceive a "râle crepitant," and in the intervening spaces the respiration is perfect, or increased in intensity, so as to become what is termed "puerile." After some time, however, it ceases to be heard, is succeeded by a "râle muqueux" in great abundance, and consisting of large bubbles, indicative of an abundant exhalation of blood into the bronchi and air-vesicles; these phenomena are soon found to extend to the whole of the lung or lobe affected, and then the diagnosis which was founded upon them is confirmed by the expectoration and its characters. In this, the second degree of the disease, the sound of the chest becomes in general obscure and dull.

505. Pulmonary apoplexy may be confounded, while in its first stage, with incipient pneumonia, in its second with catarrh, particularly if it assumes a chronic character, and if the expectoration of blood be not constant, which usually is the case.

506. *Anatomical Characters.*—Some portions of the lung, generally circumscribed to a few inches in extent, are found of a very deep dark-red colour, presenting a degree of density similar to that of hepatized lung: these appearances are not altered by ablution. When these portions are divided by an incision, we generally find in their centre some coagulated blood; the surface of the incision is granulated and homogeneous, its aspect being perfectly like that of a clot of venous blood, as it is impossible to discover any trace of vessels, bronchi, or cellular intersections. The parts of the lung which surround them are crepitant, sometimes pale, at others red and injected with blood; but they are always separated from the parts affected by the apoplexy, by an abrupt, well-marked line of demarcation.

GANGRENE OF THE LUNGS.

507. *Symptoms.*—This disease, of rather rare occur-

rence, may attack the surface of the organ, and then produce pleuritis with or without pneumo-thorax; or it may occur in any central part. In the commencement it presents the signs of a slight pneumonia, together with a great degree of general prostration; and then there supervenes an expectoration of diffluent, greenish, fœtid sputa, emitting the gangrenous odour; this is accompanied by frequent cough, and sometimes by an abundant hæmoptysis.

This disease can scarcely be said to have any symptom peculiar to it. In its first stage its characters are those of pneumonia or intense catarrh; and in the second, when an excavation is formed by the graugrene, we find pectoriloquy, as in phthisis; and if a communication be established between the bronchi and pleura, then the stethoscope indicates its existence by the "tintement metallique;" but the general adynamic symptoms, and peculiar odour of the sputa, sufficiently indicate the nature of the disease.

503. *Anatomical Characters.*—When the gangrene is not circumscribed, its borders are blended insensibly with the adjacent parts, the transition being marked by traces of inflammation in the first or second degree, but the substance of the lung is more humid, and more easily torn than in the first stage of pneumonia. It is of a dirty pale colour, or of a green, bordering on brown or black, interspersed with portions of a livid red tinge, infiltered with blood in a very liquid state. In other parts it is so much softened that it falls into deliquescence, and when divided by an incision a sanious fluid oozes out, of a greenish colour, and emitting a gangrenous fœtor. In some cases the gangrene is circumscribed, and presents the appearance of a dark, livid eschar, somewhat similar to that produced by the application of caustic potass to the skin. Sometimes this eschar is inclosed within an excavation, but more commonly is converted into a putrid, sanguineous pulp, which finds an exit into the bronchi or pleura, or into both together. When an ulcerated cavity is thus formed, after a pre-

vious inflammation, it is sometimes lined by a false membrane, which secretes a dark fœtid sanies; but when there is no membrane, then the walls of the excavation seem to secrete the sanious fluid. Their texture is granular, sometimes fungoid, soft, and of a reddish brown colour. In some instances the vessels, though denuded, cross these cavities uninjured; at other times, on the contrary, their coats ulcerate, slough, and discharge their contents.

PNEUMO-THORAX.—(*Air effused or secreted into the cavity of the pleura.*)

509. *Symptoms.*—This complaint is sudden in its invasion, and dangerous in its character: it consists essentially in the effusion into the pleura of an aeriform fluid, to which is added in many instances a liquid effusion also. Its signs vary according as there is or is not a communication between the pleura and the bronchi. The affected side gives a hollow tympanitic sound even when the thickness of the walls of the thorax is considerable. If it should happen that the lung is connected to the walls of the thorax by bands of adhesion, the sound in these points is almost natural, which renders the change in all the others still more manifest. When the respiration is suppressed in all the space occupied by the gaseous effusion, it is scarcely heard even at the root of the lung. This depends on two circumstances: 1, the compression of the lung by the air contained in the pleura; 2, the presence of that air between the lung and the wall of the thorax; for it is a bad conductor of such feeble sounds as those produced by the passage of the air into the bronchial tubes. At the sound side the respiratory murmur is distinct, often "puerile."

510. When the effusion is considerable, the affected side is dilated, but there is no "râle" of any description. When a gaseous and a liquid effusion are present at the same time, then, on making percussion, we find the sound of the thorax clear at its superior parts, but altogether dull in the inferior; hence, by varying the

patient's position, and by consequence that of the contained fluids, we can vary the seat of the clear and the dull sound.

When this gaseous effusion is owing to a fistulous communication between the pleura and the bronchi, it is known by the existence of those peculiar phenomena described by Laennec,—"la respiration, et la resonnance metalliques," or the metallic resonance and respiration.

Finally, if there be a gaseous and liquid effusion, and at the same time a fistulous communication, in addition to these signs another is added—"le tintement metallique," or metallic tinkling.

The presence of the fluid can always be ascertained by the peculiar sound caused by succussion. This is sufficient to distinguish this affection from all others in which the respiration is suppressed for a considerable time, and to any great extent. It can then be confounded only with emphysema of the lung; but in this latter the sound of the chest is rarely increased to such a degree; the respiration is never altogether suppressed, it is heard distinctly at the root of the lung; it is accompanied by some "râle," and returns occasionally in parts in which it had ceased to be perceptible.

511. *Anatomical Characters.*—We find effused into the cavity of the pleura an elastic fluid, sometimes containing sulphuretted hydrogen gas. This seldom occurs without some perceptible lesion; it usually is accompanied by a sero-purulent effusion, and by a communication with the bronchi. In other instances it results from the rupture of a tubercular cavity into the pleura, or even of a gangrenous eschar of the lung; in this latter case we also find traces of pleurisy. Finally, pneumothorax may arise from gangrene of the pleura, effusion of blood into its cavity, or from rupture of some pulmonary vesicles.

ACCIDENTAL PRODUCTIONS DEVELOPED IN THE LUNGS.

512. *Symptoms.*—There is a degree of dyspnœa pro-

proportioned to the size of the tumour, accompanied by a dry cough, or by an expectoration, whose characters are exceedingly various; there is no fever, or general disturbance of the functions. After some time the sound of the chest and murmur of respiration diminish at the points which correspond to the seat of these productions, and finally cease altogether when they have acquired any considerable size. When "ramollissement" of these productions occurs, then that series of symptoms begins to be manifested which attends the same alteration in tubercles, and which has already been detailed in the chapter on Phthisis.

513. They may be mistaken for pleuritis, chronic pericarditis, or phthisis.

514. *Anatomical Characters.*—These tumours vary very much, both in their size and composition. They are in some cases merely cysts in the lung, invested by a membrane whose structure is sometimes similar to serous, at others to mucous membranes. At other times these productions consist of a cellular, fibrous, or cartilaginous structure, in the centre of which we sometimes find calcareous or osseous concretions. These latter productions may also exist without any cyst, in which case they adhere immediately to the substance of the lung; in some instances they are developed in a mass of cartilage or tubercle.

ACCIDENTAL PRODUCTIONS DEVELOPED IN THE PLEURA.

515. *Symptoms.*—When small, or in the state of crudity, there are no means of ascertaining their presence. This can only be done when serous effusions take place, or when the tumours pass into the state of "ramollissement," and symptoms of hydro-thorax set in, namely, ægophony at the commencement, and then absence of respiration, and dull sound of the chest; to which, in some cases, symptoms of pleurisy are added.

516. They may be confounded with pleurisy, pneumonia, or pericarditis.

517. *Anatomical Characters.*—These productions vary

according to the nature of the tissues that compose them. In some cases they consist of encephaloid, in the form of small tumours in no great number; occasionally combined with melanosis; the pleura to which they adhere is, in general, red towards the point of union.

518. In other instances they are tubercular, appearing as small, transparent, grey granules, united together by a false membrane, in which they seem to have been developed, rather than in the pleura itself. These at a later period became opaque and yellow, but seldom pass into the state of "ramollissement." On the surface of the pleura we sometimes find small, white, opaque granulations, analogous to fibrous structures. Other serous membranes present occasionally similar productions, which seem to be the result of inflammation. And, lastly, we sometimes find on the surface of this membrane depositions of cartilage, fibro-cartilage, and even osseous matter.

DISEASES OF THE HEART

AND

ITS MEMBRANES.

INFLAMMATION OF THE LINING MEMBRANE OF THE AORTA.—AORTITIS.

519. *Symptoms.*—Considerable development of the pulsations of the aorta, and sometimes of the large arteries; those of the aorta can be recognized at the depression at the top of the sternum. In some cases there is a sensation of beat or pain, which is referred to the inflamed part, accompanied at the same time by sinking and anxiety. When aortitis becomes chronic, the arterial pulsations usually become more slow, and then we observe symptoms of dilatation or hypertrophy of the heart. Accidental tissues developed in the trajet of the aorta may simulate aortitis, particularly when their density is such as to facilitate the transmission of the pulsations of the vessel.

520. *The diseases with which it may be confounded* are, any accidental productions developed in the course of the aorta, particularly when they are so dense as to facilitate the transmission of the pulsations of the vessel.

521. *Anatomical Characters.*—Redness of the lining membrane of the aorta, variable in degree, and appearing in some cases as if it had been painted. This colour is, in general, circumscribed; in most cases it is scarlet; but when it extends to the right cavities of the heart and pulmonary artery, it is of a more or less deep shade of violet. The lining membrane presents no distinct traces of injection; it is, however, quite otherwise

with the cellular coat; it is not much thickened. On its surface we sometimes find a layer of coagulable lymph: it is also frequently the seat of deposits of fibrous lamellæ, or of osseous or calcareous matter. In this latter case all the coats of the artery are thickened, friable, and destitute of their usual elasticity. We sometimes find spots of ulceration affecting the lining membrane only, or penetrating more deeply into the coats of the vessel.

ANEURISM OF THE AORTA.

522. *Symptoms.*—This affection is marked by strong and loud pulsations, synchronous with those of the pulse, and accompanied by the bellows-sound—"*bruit de soufflet.*" The seat of these symptoms varies according to the situation which the tumour occupies; and if it be so situated as to compress the trachea or bronchi, it will determine a peculiar hissing sound during the act of respiration or speaking. The sound of the chest is diminished, and sometimes above the heart there is a murmur or thrill perceptible by the stethoscope, or even by the hand.

523. When the aneurism is seated in the ascending aorta, the pulsations are most perceptible at the sternum and cartilages of the ribs; but when the descending aorta is dilated, then they are perceived along the dorsal vertebræ; finally, when it occurs in the abdominal aorta, we observe them with great distinctness, and to a great extent, in the abdomen.

524. Aneurism of the thoracic aorta may be mistaken for a contraction of the orifices of the heart; that of the abdominal aorta may resemble the effects of tumours placed along its course.

525. *Anatomical Characters.*—Dilatation of the aorta occurs most usually in its curvature and ascending portion; it may occupy the whole circumference of the vessel, or only a part of it; in which latter case it generally occupies the anterior or lateral part of the tube. The three coats of the artery almost always have some

degree of redness, together with some exudations, ulcerations, or spots of ossific matter. In some cases the dilatation does not (as in true aneurism) extend to all the coats of the vessel; the inner and middle coats are torn, the cellular alone forming the wall of the sac. Finally, we sometimes find the coats of the artery both dilated and torn, the blood being effused beneath the cellular membrane, which serves as its investment. The fibrine of the blood which lines aneurismal tumours is disposed in successive concentric layers, deposited one upon the other. Of these the external ones are the most dense in texture and dark in colour, and also most firmly united to each other: they are thinner in the true aneurism than in that which is accompanied by ulceration of the two inner tunics, and complete rupture of the walls of the artery.

INDURATION AND CONCRETION OF THE VALVES OF THE HEART.

526. *Symptoms.*—From the very commencement there is habitual dyspnœa (increased by the least exercise) together with palpitations; and during the contractions of the heart, the sound it emits is rough, and, as it were, stifled. Such symptoms as these may induce us to suspect an incipient contraction of the orifices; but when it becomes considerable, it may be recognized by the following signs:—If the affection is seated in the auriculo-ventricular openings, we hear, during the contraction of the auricles (which is then prolonged beyond its usual duration) a slight "*bruit de rape*" (sound of a file), or a "*bruit de soufflet*" (sound of a bellows). These phenomena are constant in their duration: the former depends on an osseous induration of the valves, the latter is heard when its structure is that of cartilage or fibro-cartilage. When the contraction is seated in the arterial openings (*aortic* and *pulmonary*), the sound above indicated is synchronous with the pulse and contraction of the ventricles; if the left orifices (the *mitral valvules, and sigmoid valves of the aorta*) are contracted, the "bruit de

rape," or "bruit de soufflet," is heard between the cartilages of the fifth and seventh ribs at the left side, whilst, if it occupies the orifices at the right side of the heart (the tricuspid valves, and sigmoid of the pulmonary artery), the sound is most distinctly heard at the inferior part of the sternum. A murmuring, or thrilling, is in some cases sensible to the hand placed on the region of the heart, particularly when the mitral valve is ossified, and the contraction of the left auriculo-ventricular opening is considerable. In this disease the palpitations are frequent; the strokes of the heart generally intermittent, unequal, and sometimes very strong, whilst those of the pulse, on the contrary, are small and concentrated: they are more irregular when the contraction occurs at the left than at the right side. The face is of a violet hue, the limbs are œdematous, the patient is constantly afflicted with a dyspnœa, which increases until it proves fatal.

527. These productions may be mistaken for dilatation or hypertrophy of the heart; for pericarditis or palpitations.

528. *Anatomical Characters.*—When the valves of the heart are affected by these alterations in their whole extent, their natural form is lost; they become coiled upon themselves in such a way as to contract the orifice at which they are placed, which in some instances has been thus reduced to a diameter of three or four lines. The surface of the valve which is the seat of the induration is sometimes red, and is always smooth, unless there be osseous particles or other deposits upon it; its consistence is that of fibro-cartilage, cartilage, or even bone. Sometimes the fibrous band which exists between the layers of the valves is alone affected; sometimes it is the points of the valve that contract adhesions to one another, and so reduce the orifice to the form of an osseous canal; in other cases, we find in the duplicatures of the valve nothing more than some osseous or cartilaginous concretions, which may pierce through it, and so come into immediate contact with the blood

Finally, the valves may contain in their free border some pisiform concretions. These different alterations occur most usually in the mitral valves, and sigmoid valves of the aorta, particularly in the former; whilst, on the other hand, they are very rarely found in the tricuspid valves, or sigmoid valves of the pulmonary artery.

529. Vegetations on the valves exhibit the appearance of verrucæ, and are usually seated on the surface of the valves of the left cavities: they are round, rough, elongated, placed close to each other; their colour is somewhat blue, violet, or red; they adhere closely to the subjacent parts; their texture is fleshy, resembling that of compact polypous concretions: there sometimes exists in their centre a small dot of black blood. These vegetations sometimes resemble small cysts, adherent to the valve, usually at its free border, and most commonly are found on the aortic and mitral valves.

INFLAMMATION OF THE SEROUS MEMBRANE OF THE PERICARDIUM.—PERICARDITIS.

530. *Symptoms.*—These are very uncertain; still, when the following phenomena are present, we may suspect the existence of pericarditis; when the contractions of the heart, in a man otherwise healthy, without any perceptible cause, begin to give a strong impulse, and produce a sound more intense than in the natural state; when at intervals its stroke becomes more weak and short, corresponding to intermissions of the pulse, which is very small and frequent, or even insensible. In some cases we hear a sound similar to the crackling of new leather, but this lasts only for a few hours. There is more or less of dyspnœa; considerable anxiety, acute pain, and fainting on the slightest exertion; sometimes the patient complains of an acute or lancinating pain, or of heat and weight at the region of the heart; occasionally the sound of the thorax in this part is dull. When the disease is chronic, these symptoms are less

decisive, and come on more slowly. When the pericardium adheres to the heart, some persons say that a continued undulating motion is perceptible, distinct from that undulation which naturally exists at the region of the heart; sometimes the contractions of the auricles are more obscure than in the healthy state. To establish the diagnosis of pericarditis all these symptoms should be present, and even so, some doubts must rest upon it.

531. Pericarditis may be confounded with pleuritis, hydrops pericardii, or with certain tumours developed in the vicinity of the heart.

532. *Anatomical Characters.*—The redness of the pericardium in this affection is not intense; it is sometimes dotted on the surface: in the chronic form it is more strongly marked, and diffused in patches, but there is no perceptible thickening of the membrane. In the greater number of cases a layer of false membrane is deposited on the serous surface of the pericardium, which in most cases covers its whole extent, but in some only a part of it. The cavity of the pericardium contains more or less of a straw-coloured serous effusion, in which float some small albuminous flocculi; the quantity of this fluid diminishes when the disease is of long standing.

[There are few diseases more difficult to be recognized during life than pericarditis. Laennec, even in the second edition of his work, admits that the information afforded by the stethoscope is just as unsatisfactory as that furnished by the ordinary means of examination. When all the symptoms stated in the text occur suddenly in a person previously healthy, they afford adequate grounds for presuming the pericardium to be the seat of the disease, but they cannot be considered as pathognomic of pericarditis; for, to use the words of Laennec, "congestions of blood in the heart, and polypous concretions which arise therefrom, may produce exactly the same symptoms." Still, whatever doubts

may arise concerning the precise seat of the disease, there can be no hesitation as to the plan of treatment to be adopted when such a train of symptoms sets in.

Louis has given, with great minuteness, the histories of some cases of pericarditis, with a view to clear up the diagnosis. The characteristic symptoms are pain, more or less acute, in the region of the heart, occurring rather suddenly, and accompanied by palpitations and a sense of oppression, together with an unequal, intermittent pulse, the action of the heart being also irregular, unequal, and even tumultuous. The space within which the heart's impulse is perceptible is much restricted. After some time, the sound emitted on percussion becomes obscure, or altogether dull, in the region of the heart, the rest of the cavity emitting its natural sound; the ribs are also rendered prominent in consequence of the deposition of lymph and the effusion of fluid determined by the inflammation. But what is the precise seat of that inflammation? In order to arrive at the answer to this question we reason in the following way on the facts of the case as above stated:—The character of the sound produced by percussion indicates the existence of some foreign body in the region of the heart: this cannot be solid, for if it were, the force of the heart's impulse, so far from being diminished, would be increased. The fluid thus inferred to exist in the thorax cannot be contained within the pleura; for if it were, it would give rise, at some period of the disease, to that phenomenon called œgophony: it must, then, be contained within the pericardium, being the result of an acute inflammation of the serous lamella of that membrane, which is sufficiently indicated by the symptoms and progress of the case. This mode of reasoning, ("par voie d'exclusion") is found of the greatest utility in clearing up the diagnosis of complex cases; it is often the only one that can be adopted. It is confessedly very difficult in most cases to determine the precise seat of the various affections referable to lesions of the cerebro-spinal system. From

the derangement of any given function, we are in general warranted in inferring a lesion of the organ or part which is known to preside over that function; yet great difficulties arise from the many sympathies which exist between important organs, even when they are distinct and separate both in situation and connexion; but the difficulty is considerably increased when the different parts ministering to distinct functions are aggregated together by a perfect continuity of substance, so as to form a *totum*, or whole, as in the cerebro-spinal system. Hence, in reasoning on the affections referable to this system, we pass in review each of its parts and their functions successively; we then find that certain functions have all along continued unimpaired; and, as we proceed, we are often enabled to exclude from any participation in the existing affection the greater number of these parts, and so arrive at the conclusion that it must depend on a lesion of the remainder; or, to state this process of reasoning in the language of the logicians, "from the emotion of all the parts but one, we conclude the position of that one."]

SEROUS EFFUSION INTO THE PERICARDIUM.—HYDROPS PERICARDII.

533. *Symptoms.*—By no means decisive; the sound emitted by percussion is more dull than natural; there is a sensation of weight and oppression in the region of the heart, its pulsations are perceptible in a very wide range, but vary both in degree and situation every instant, being sometimes towards the right side, sometimes towards the left, but always tumultuous and obscure; the pulse small, frequent, and irregular; the extremities œdematous; the patient is threatened with suffocation if placed in the horizontal position, and is subject to faintings, but not often to palpitation.

534. It may be confounded with pericarditis, pleuritis, and some organic affections of the heart.

535. *Anatomical Characters.*—The substance of the heart appears natural, so does the pericardium; it

however contains a quantity, more or less considerable, of a transparent citron-coloured serous fluid: in some cases the effusion is tinged with blood; its quantity is less when the affection is connected with a general dropsy than when it is purely local: in some cases air is also contained in the serous membrane.

[When opening bodies after death, we not unfrequently find some fluid in the pericardium; the quantity varying very much, being in some cases not more than a few ounces: such an effusion is not to be attributed to disease; it may have occurred just as death took place. When in consequence of a general dropsical diathesis, effusions take place into the other serous cavities, a similar effusion may be found in the pericardium also, but in such cases the quantity it contains is trifling, as this membrane is the last which takes on the diseased action. Idiopathic hydrops pericardii is rather a rare affection, and if the quantity of fluid effused be small, it is exceedingly difficult to ascertain its existence with any certainty; if it be considerable, the prominence of the ribs, and dulness of the sound on percussion, and the state of the circulating system, will, in general, indicate the seat of the effusion; but auscultation by itself furnishes no decisive symptom. The cylinder may possibly assist us somewhat, but to use the words of Laennec, "je ne puis dire quelles signes il fournira, parceque je n'ai pas assez d'occasions d'observer l'hydro-pericarde idiopathique." These considerations should be duly attended to when the operation of tapping the pericardium is proposed. They shew how difficult it is to ascertain with precision the existence of this affection, and to avoid confounding it with others. It should be recollected that this occurred even to Desault; he operated in two cases, supposing the disease to be hydrops pericardii, but it proved to be encysted dropsy of the pleura. I mention the fact merely to shew the difficulty of the diagnosis, not that I think the mistake would produce any very serious ill consequence.]

[As any suggestion from Laennec, on such a subject as this, is entitled to the most respectful attention, I shall briefly state the mode which he recommends of tapping the pericardium, should such an operation be resolved on. He proposes that the lower bone of the sternum should be trephined just above the ensiform cartilage: this will enable the operator to feel the membrane before he punctures it, and ascertain whether there is any adequate evidence of the existence of a fluid within it.

HYPERTROPHY OF THE HEART.

[Hypertrophy literally means increased nutrition and enlargement—*υπερ*, super; *τροφη*, nutritio; *τρεφο*, alo. The term was first employed by Laennec; it expresses better the nature of the change set up in the organ than the word previously employed by Corvisart and others, viz. aneurism, active or passive,—the one implying a thickening of the walls of the heart, the other a thinning as if by dilatation.]

536. *Symptoms.*—The left ventricle gives a very strong impulse between the cartilages of the fifth and seventh ribs, to which space the pulsations of the heart are circumscribed, and in which the sound on percussion is dull. The impulse of the ventricles is very much lengthened when the hypertrophy is considerable; the contraction of the auricles, on the contrary, is very short, and when examined in the præcordial region its sound is scarcely perceptible, whilst at the superior part of the sternum, and under the clavicles, it is loud and distinct. The stroke of the heart is heard only in a very small space, and is scarcely perceptible at the top of the sternum or under the left clavicle, and scarcely at all at the right side, though it is continually perceived and heard by the patient. We usually find the pulse strong and full, the sound on percussion of the region of the heart dull, and the face presenting a red tinge. These are symptoms of secondary importance, but still deserve attention.

537. When the hypertrophy occurs in the right ventricle, the stroke of this cavity is stronger than natural, and the impulse which it gives is perceived more plainly at the bottom of the sternum than between the cartilages of the fifth and seventh ribs. It is also more strongly marked at the right than at the left side of the chest. The sound on percussion is dull in this same region, and the patient is frequently attacked by hæmoptysis.

538. When the hypertrophy exists in both ventricles at the same time, we of course find the symptoms peculiar to each; those which indicate hypertrophy of the right ventricle usually predominate.

539. This affection may be confounded with contraction of the orifices of the heart or aorta, or with inflammation of the latter vessel.

540. *Anatomical Characters.*—There are some differences, according to the ventricle which is affected. When the hypertrophy occurs in the left ventricle, there is an increase of thickness, and also of density, in its walls and in its base; but the thickness diminishes gradually towards its apex. It is also less in the septum ventriculorum; it is, however, in proportion to that of the columnæ carnæ; its muscular substance is more firm and deeply coloured than in the natural state, and its cavity is diminished in proportion to the increase in thickness of its walls. The size of the right ventricle is diminished in proportion as that of the left is increased; it becomes flattened, and appears as if it were a cavity contained within that of the left. When the hypertrophy is seated in the right ventricle, its thickness and density are always less than in the left cavity; it does not collapse when divided; its thickness is uniform over its whole extent, except probably towards the tricuspid valves and origin of the pulmonary artery; the columnæ carneæ are also increased in thickness.

DILATATION OF THE VENTRICLES OF THE HEART.

541. *Symptoms.*—When the left ventricle is dilated, the contractions of the heart give rise to a clear and

loud sound between the cartilages of the fifth and seventh ribs. The loudness of this sound, and extent in which it is perceptible, are in proportion to the degree of the dilatation: when the dilatation is at the right side, the sound of the heart is louder at the inferior part of the sternum, than opposite the cartilages of the ribs. The extent in which the sound is heard is in proportion to the degree of the dilatation: when palpitations occur, their impulse is more weak than in the natural state. The external jugular veins are swollen, but do not present any pulsation; the countenance is usually of a purple colour; in most cases dilatation of the heart occurs in both ventricles at the same time.

542. It may be confounded with contraction of the orifices of the heart.

543. *Anatomical Characters.* — The capacity of the ventricles is found to be increased, and the thickness of their walls proportionably diminished, particularly towards the point of the left ventricle. The dilatation is sometimes partial, being confined to a single point. The substance of the heart is more or less deeply red; in some cases its colour is altered, and its firmness considerably diminished.

DILATATION, WITH HYPERTROPHY OF THE VENTRICLES.

544. *Symptoms.* — The impulse of the ventricles is strong, and their contraction determines a sound; that of the auricles also is sonorous. The stroke of the heart is heard over a very wide range, and is perceived, particularly in thin and young persons, even to the posterior part of the right side of the chest. The contractions of the ventricles are perceptible to the hand, when placed at the region of the heart, and are sometimes interrupted by short and even violent pulsations. When the left side of the heart is affected, these results are perceived by the cylinder placed between the cartilages of the fifth and seventh ribs. In these cases the pulse is usually strong, hard, vibrating, and resisting;

but when the right cavity is the seat of the affection, its contractions are perceived at the inferior part of the sternum. We may infer that the two sides of the heart are affected, when the phenomena above described are perceived equally at the right and left side.

545. This affection may be confounded with inflammation of the heart.

546. *Anatomical Characters.*—Partake of the characters above enumerated, when treating of each of these affections.

DILATATION, WITH HYPERTROPHY OF THE AURICLES.

547. *Symptoms.*—The contraction of the auricles emits a dull sound, instead of the clear one which exists in the natural state. Conjointly with this dull sound of the auricles, we usually find symptoms which indicate an induration of the valves, for dilatation of the auricles is the necessary consequence of a contraction of the corresponding auriculo-ventricular opening; that is to say, dilatation of the right auricle is the result of a contraction in the right auriculo-ventricular opening; that of the left auricle being dependent on the contraction of the left auriculo-ventricular opening. When dilatation with hypertrophy of the auricles occurs, together with hypertrophy of the ventricles, the contraction of the auricles is most distinctly heard at the superior part of the sternum, and under the clavicles.

548. This affection may be confounded with contraction of one or other of the auriculo-ventricular openings.

549. *Anatomical Characters.*—The name expresses the lesion of structure found on examination. The cavity of the auricle is found increased in its capacity, and its walls thickened.

INFLAMMATION OF THE FLESHY SUBSTANCE OF THE HEART—CARDITIS.

550. *Symptoms.*—Pathologists have not, as yet, been able to ascertain with sufficient precision any symptoms

which enable us to indicate satisfactorily the existence of inflammation of the substance of the heart.

551. Pericarditis, aortitis, pleuritis at the left side, may be confounded with this affection.

552. *Anatomical Characters.*—Carditis is a rare disease. The inflammation is usually confined to some detached part of the substance of the heart; in these cases pus is usually found diffused amongst the fleshy fibres of the organ, or united into one cyst. When ulcerations exist, they are found more frequently on the internal surface than at the external.

SOFTENING OF THE HEART.

553. *Symptoms* are very obscure; so much so, that its existence is often not even suspected. When the disease is in its acute state we usually find a degree of anxiety in the patient; his pulse small, soft, and accelerated; the contractions of the heart are quick, hurried, and, as it were, convulsive; the sound which they emit is dull, the impulse is feeble. Patients under such circumstances are subject to fainting fits, and death takes place suddenly. When the "ramollissement" of the heart is chronic, its contractions, as well as those of the pulse, are usually frequent, and very feeble; in this respect, however, they are rather variable, being sometimes slow, sometimes hurried.

554. Pericarditis may be confounded with this disease.

555. *Anatomical Characters.*—The consistence of the heart is considerably diminished, and it may be torn very readily. It is so soft and friable that the finger easily penetrates into it: in some cases this change of structure is found to exist only at one side of the heart. When the disease is acute, the colour of the heart is deep red, or even brown; but if it has been chronic, it is found pale and yellowish. The walls of the ventricles, when cut through, collapse and sink down. When ramollissement is followed by rupture, which has happened in a few cases, this accident was observed to have occurred near the point of the left ventricle.

INDURATION OF THE HEART.

556. *Symptoms.*—At the commencement of this disease we usually find the same symptoms as in hypertrophy of the heart; but in proportion as the induration makes progress, the stroke of the heart diminishes in energy. When the induration is moderate in degree, the contractions of the heart are sometimes so strong as to be heard even at some distance from the patient. The diagnosis of this disease is still involved in great obscurity.

557. Hypertrophy may be mistaken for it.

558. *Anatomical Characters.*—The structure of the heart is sometimes of a rosy red; its consistence approaches that of fibro-cartilage, and when cut is found so firm as to grate under the edge of the scalpel. This induration, which is variable in degree, has not yet been observed to extend to the whole substance of the heart; it is usually confined to one or other of its surfaces. It is sometimes found in the form of incrustations, and seems as if it had commenced in the first instance in the pericardium. Induration of the heart does not necessarily give rise to any increase or diminution of the capacity of its cavity.

POLYPOUS CONCRETIONS IN THE HEART.

559. *Symptoms.*—When the concretions are recent, the contractions of the heart are obscure, confused, and so irregular as to be with difficulty analysed. These symptoms usually supervene in a person in whom the action of the organ had been previously regular. We may presume that the obstacle to the transmission of the blood exists in the right cavities when these phenomena are perceptible at the inferior part of the sternum, but the left cavities are obstructed when the irregularity of the contraction is heard between the cartilages of the fifth and seventh ribs. The diagnosis becomes almost certain when the disturbance in the movements of the heart exists only at one side. When the concretions are of long standing, they give rise to a considerable

degree of dyspnœa, extreme anxiety, and anasarca, which is confined to the superior or inferior parts of the body, according as the concretions occupy the superior or inferior vena cava.

560. Pericarditis and contraction of the orifices may be confounded with it.

561. *Anatomical Characters.*—When the concretions are recent, the clot is surrounded at its margins by an opaque whitish layer, which does not adhere to the walls of the heart, or its vessels; but after some time a connexion is established between them. These concretions are usually free from the colouring matter of the blood; they resemble a mass of fibrine, the consistence of which varies in different cases; in some instances they become organized. In dropsical subjects the concretions, at their commencement, are gelatinous and semi-transparent; they are usually found in the sinus of the right auricle, in the venæ cavæ, and in the left ventricle; the columnæ carnæ, to which they adhere, are flattened. The walls of the auricles, and also the sinuses, may be lined with concretions of much less consistence than those just described, being like a mere paste, and therefore presenting none of the characters of fibrine.

COMMUNICATION BETWEEN THE RIGHT AND LEFT CAVITIES OF THE HEART

562. *Symptoms.*—The colour of the skin and mucous membranes is livid, blue, or violet, particularly when the affection exists from the time of birth. The respiration is always laborious; palpitations of the heart and syncope frequently occur: the general heat of the body is diminished, and the patient is very susceptible of the impression of cold. In some cases all the symptoms of hypertrophy of the right cavities are present.

This disease may be simulated by contraction of the auriculo-ventricular openings, or of the arterial orifices; but as these latter affections seldom occur before the age of puberty, the history of the case will clear up the diagnosis.

563. *Anatomical Characters.*—The foramen ovale is ound to have continued open, or to have been again pened after it had been closed, the two lamellæ of the alve which exist in the fœtus not having been com- letely united, so that a probe can readily be passed rom the right to the left auricle. The walls of the right entricle are usually found thickened, the auricle at the ame side being dilated. In some cases an obstacle to he transmission of the blood is found either in the entricle or pulmonary artery; the foramen ovale and uctus arteriosus sometimes continue as in the fœtal tate. The septum which separates the ventricles may e perforated to a greater or less extent; so much so, hat sometimes the two ventricles seem to form one avity. This accident usually takes place towards the ase of the heart, in which case the aorta receives lood from the right ventricle as well as from the left. The two auricles have been found imperfectly sepa- ated, and opening into the right ventricle, which ommunicated freely with the left; this latter being eprived of its auricular opening, but giving rise to the orta as usual. Finally, several other malformations may be found.

[It is generally supposed that the blue colour ob- served in some cachectic persons is caused by the existence of a communication between the right and left sides of the heart. It is imagined that such a mal- formation, or accident, must of necessity give rise to a mixture of the venous and arterial blood in the heart, and that the circulation of this impure fluid must pro- duce a livid colour of the skin; yet when we look over the reports of cases, and *post-mortem* examinations, we find several instances recorded in which the foramen ovale was found open in persons who had, during life, presented no symptom of any derangement of the circu- lating system. Portal found so many cases of this sort in the writings of different anatomists, that he felt warranted in concluding that the foramen as frequently remains open as it becomes closed; but this opinion by

no means accords with general experience. Louis states that in 450 cases that had died of different affections in M. Chomel's wards, in "La Charité," within the space of four years and a half, two only retained the communication between the right and left cavities of the heart. This I believe will be found to agree with the result of observations made in hospitals and dissecting-rooms. I have had a pretty extensive acquaintance with anatomical pursuits for several years, and I cannot now recollect to have met with more than two cases in which the foramen ovale had remained open in adults. One of these occurred within the last month in the London Fever Hospital. This individual, a female about 20 years old, was brought to the house in an advanced stage of fever; no information was received of her previous history: she died in two days, without having exhibited within that time any symptom of an organic affection of the heart, or derangement of the circulating system, different from what ordinarily occurs in cases of fever. On examination after death the heart was found of its natural size, its walls of their usual thickness, the different openings and their valves presenting their usual conformation, the only perceptible deviation being that the foramen ovale was sufficiently open to admit the passage of the extremity of the little finger. In such a case, the mere fact of the foramen being open will not produce a mixture of the venous and arterial blood, for it should be recollected that the two auricles are filled at the same time by currents of blood propelled from opposite directions. Hence if the valve exists (as it frequently does, though not united by adhesion to the rest of the auricular septum), it will be elevated and supported by the column of blood admitted into the left auricle, and so perform its functions as if perfect union had taken place. But even if the valve be incomplete, or altogether wanting, does it necessarily follow that the two sorts of blood will be blended together? I believe not, for when the auricles contract to propel the contained blood into the

ventricles, it can more readily and freely pass into the latter cavities (as they are empty), than from one auricle into the other; and whilst they are being filled, the simultaneous entrance of the blood into both will prevent the passage of any current from one to the other; and so, such a mixture as that here alluded to, will not take place; at least to any great extent. But if any impediment to the free transmission of blood occurs either in the auricular, aortic, or pulmonary openings, then hypertrophy of some of the cavities will take place, a derangement of the heart's rhythm and of the circulation generally, will follow, and so the blue disease, or some other form of constitutional disturbance, will be produced. The following case, from Morgagni, bears out this view of the subject.

A girl died in her sixteenth year, having been confined to her bed nearly from her infancy; her respiration had always been excessively laborious and restricted, and her skin dark and livid. The right ventricle was found enlarged and thickened, tho right auricle double the size and thickness of the left, tho foramen ovale open so as to admit the finger to pass through; the sigmoid valves of the pulmonary artery were ossified and contracted together, leaving an opening scarcely sufficient to admit a quill.

Is the dark colour produced by the circulation of a mixed and impure blood by the arteries? If it were, would not the skin of the fœtus be as dark as that of persons afflicted with cyanosis, inasmuch as the blood in the arteries is as dark as that in the veins? Must we not admit that it depends rather on a stagnation and reflux of blood in the venous system generally, dependent on some impediment to its transmission through the heart? In cases of hypertrophy of the heart, particularly when complicated with contraction of some of its orifices, the skin frequently becomes perfectly blue or livid; though there cannot be any admixture of the two sorts of blood. On the other hand the foramen

may remain open, and no such change of colour, or other deviation from health, may take place, so long as the heart in other respects retains its natural conformation. It will naturally be asked, whence is it that the skin alone presents this dark colour? Why do not other organs, such as the brain, the cellular texture, present the same appearance when examined? If it depends on a stagnation of the blood in the veins, or on an impediment to its free circulation, why should not all these structures be affected equally by a cause so general? "Causa latet, res est notissima."]

ANGINA PECTORIS.

564. *Symptoms.*—The patient complains of a sense of constriction in the chest, with very acute and lancinating pains in the region of the heart, occurring suddenly, and in fits. When the disease is recent, these occur usually in the day, and are of very short duration, lasting only a few seconds. The dyspnœa is considerably increased when the patient walks against the wind. The pulse during the attack is frequent and almost insensible, but is not intermittent, or irregular, unless the affection be complicated with some other. Pain extends down the left arm, and sometimes, but rarely, to the right. The patient is troubled with palpitations, anxiety, and a sense of impending suffocation. As the disease makes progress, a painful sensation of numbness extends to the fore-arm, and even to the fingers; the attacks become more frequent, and of longer duration, and the patient is afflicted by the constant apprehension of death. This disease, which is always mortal, is neither regular in its progress, nor fixed in its duration, which remark is also true with regard to the recurrence and duration of the fits.

564*. Angina pectoris may be confounded with various organic affections of the heart, particularly with dilatation of its cavities; also with emphysema of the lungs,

with hydro-thorax, hydrops pericardii, and abscess situated in the anterior mediastinum.

565. *Anatomical Characters.*—Are altogether unknown. In some cases we find various alterations of the valves, old adhesions of the pericardium, ossification of the coronary arteries, or deposits of fat round the heart and its large vessels.

DISEASES

OF THE

DIGESTIVE ORGANS

AND

THEIR CONNEXIONS.

INFLAMMATION OF THE GUMS.

566. *Symptoms.*—The gums swollen and red; when pressed, allow blood to ooze out from their surface. They become painful, and if the inflammation passes to the chronic state, excrescences shoot up from the surface, supported by a pale red pedicle, and often extend to such a length as to cover the teeth. In some cases they become so firm in their texture as to resemble fibro-cartilage, in which case they cease to be painful. Inflamed gums are often attacked by ulcerations, or abscess; they occasionally continue for a considerable time soft and spongy.

567. *Anatomical Characters.*—Are merely what we have just enumerated.

APHTHÆ.

567. *Symptoms.*—These consist of an eruption of small, white, superficial vesicles, single or confluent, filled with a glutinous or puriform fluid. They usually are succeeded by a crust, or by ulcerations, the surface of which may be grey or reddish. The vesicles are seated in the mucous membrane of the cheek, extending backwards to the fauces; they produce a sensation of heat, with

some difficulty of mastication and of deglutition. This affection is sometimes endemic, and occasionally contagious; it usually affects children in early infancy. It is not dangerous, except it passes to the state of gangrene, or extends to the digestive tube, or larynx and trachea; in which cases it constitutes œsophagitis, or gastro-enteritis.

568. Its *Anatomical Characters* are those just enumerated.

ACUTE INFLAMMATION OF THE TONGUE.—GLOSSITIS.

569. *Symptoms.*—The tongue is attacked by an acute or pulsating pain; it becomes red, hard, and very sensible, then swollen and covered with a thick mucous coating. The tumefaction is sometimes so great that it shuts down the epiglottis, compresses the larynx, and tends to produce suffocation: it is pendent outside the mouth, becomes immoveable, and incapable of serving the purposes of articulation. The mouth is open, and from it flows a viscid, and sometimes fetid saliva; deglutition is impossible, respiration much impeded, and the face red and swollen; there is usually some cough, and more or less fever.

570. *Anatomical Characters.*—Consist of those which have been just enumerated.

INFLAMMATION OF THE TONSILS.—AMYGDALITIS, OR ANGINA TONSILLARIS.

571. *Symptoms.*—Heat and pain, increased by deglutition, in the posterior part of the mouth, with swelling and redness of one or both tonsils, which are studded with whitish specks; the inflammation sometimes extends to the Eustachian tubes; the mucus of the fauces, which is at first diminished, afterwards increases in quantity, and is expelled with pain and difficulty; redness, swelling, and extension of the uvula, which causes a frequent desire of swallowing. If the inflammation be intense, and attacks both tonsils at the same time, the respiration becomes impeded, sometimes to such a

degree as to threaten suffocation. Amygdalitis is frequently combined with inflammation of the larynx. The tongue is generally covered with a thick coat of a yellowish white colour; it is seldom red, even at the edges.

572. It may be confounded with pharyngitis, or with angina laryngea.

573. *Anatomical Characters.*—Redness and tumefaction of the tonsils, more or less considerable; suppuration or induration of these glands.

INFLAMMATION OF THE PHARYNX.—PHARYNGITIS.

574. *Symptoms.*—Swelling and redness in the back part of the pharynx, which is generally spotted with whitish patches; deglutition difficult, often impracticable; no impediment to respiration; heat and dryness of the pharynx, followed by a copious secretion of mucus, which is expelled with pain; the tongue is generally foul and coated, but without redness. Pharyngitis is often accompanied by amygdalitis.

575. *Anatomical Characters.*—To the morbid alterations which have been pointed out in treating of glossitis and amygdalitis, we may add, that the inflamed part may be increased in thickness, penetrated by pus, or covered with a false membrane.

CANCER OF THE PHARYNX.

576. *Symptoms.*—The first symptoms of this affection are very obscure, and usually consist of uneasy sensations in the throat, and slight impediment to deglutition, consequent, in general, on inflammation of the pharynx; afterwards prickly pains, supervening at intervals, are often perceived in the inferior part of the pharynx; deglutition becomes painful; fluids are rejected as soon as swallowed. If the pharynx be examined, it is found tumefied, hard, and insensible to pressure; at a more advanced period ulceration takes place, and the ulcer presents an uneven surface with everted edges, and secretes a foul putrid sanies; at this period acute lancinating pains are experienced.

577. *Anatomical Characters.*—The parietes of the pharynx are thickened, hard, and transformed into a scirrhous substance; encephaloid matter is sometimes, though very seldom, to be found there. The mucous and muscular coats are almost always distinct, though degenerated, at least whenever the scirrhus does not become softened; one or more ulcers, with thick, hard, and everted edges, present themselves; their surface is unequal, granular, or fungous. The disease extends more or less to the adjacent parts.

INFLAMMATION OF THE ŒSOPHAGUS.—ŒSOPHAGITIS.

578. *Symptoms.*—Pain in a part of the œsophagus, increased by pressure applied to the neck, when the inflammation is seated in its superior portion, between the trachea and spine; difficulty of swallowing; solids and fluids produce a burning sensation along the whole or some part of the œsophagus; they are sometimes rejected by the nostrils; continued hiccup. When this affection assumes a chronic form it is usually accompanied by vomiting, which supervenes immediately after taking food.

579. It may be confounded with cancer of the œsophagus.

580. *Anatomical Characters.*—Redness and thickening of the mucous membrane, more or less conspicuous; it is sometimes lined with a false membrane, very thin and intimately adherent.

CANCER OF THE ŒSOPHAGUS.

581. *Symptoms.*—This disease frequently commences with hiccup, and shooting pains in the course of the œsophagus, with interruption to the free passage of food immediately after deglutition. When it affects the superior portion of the œsophagus, its symptoms are the same as those of cancer of the pharynx. If it be situated lower down, gnawing pains and a burning sensation are experienced behind the trachea, particularly if the patient make use of drinks containing spirit, which

always exasperate the disease. If the disease be seated near the cardia, the food remains for a short time in the œsophagus, and is then rejected without effort, mixed with mucus. If it communicates with the air-tubes, deglutition is always followed by a violent fit of coughing.

582. *Anatomical Characters.*—Similar to those of cancer of the pharynx. The cavity of the œsophagus is narrowed by the thickening of its walls; sometimes the degenerated part retains the cylindrical form of the œsophagus; sometimes it is transformed into an irregular mass adhering to the trachea, to the lungs, or even to the dorsal vertebræ.

PUTRID SORE-THROAT.—ANGINA GANGRENOSA.

583. *Symptoms.*—There are no signs at the commencement of this disease by which we should be led to suspect its real nature, as all its primary symptoms are perfectly similar to those of common amygdalitis; but in a short time it assumes its peculiar characters, and all doubts as to its nature are removed by the appearance of gangrene, which sometimes occurs so early as the first day. From the severity of this affection, we should always be on the watch in inflammations of the throat, and dread its approach; 1st, in delicate women and weak children; 2d, in persons who are already affected with gangrene of other parts; 3d, in cases of sore-throat, occurring in scarlatina, or other eruptions of a livid colour; 4th, when the disease is epidemic; 5th, when the individual affected has attended others in the complaint, for under some circumstances it appears contagious; 6th, when the inflamed parts are livid, or of a deep red; or when, after having been of a lively red, they become pale, at the same time that the patient complains of dryness of the fauces, and considerable general depression; or when the parts are covered with those false membranes which so frequently occur in all inflammations of the throat; 7th, in fine, when general or local bleeding induces a state of weakness,

neither proportionable to the strength of the patient or quantity of blood drawn.

584. Angina gangrenosa may be known by the small white or ash-coloured specks which appear on the tonsils and other parts of the mucous membrane, spreading with rapidity, and running into one another so as to form large patches; the surrounding membrane is of a pale or livid colour; these patches become grey, or even black, towards the conclusion; as soon as they are completely developed the throat ceases to give pain, deglutition becomes easy, the breath loses its fœtor; but symptoms of general prostration supervene.

585. When the breathing through the nostrils becomes difficult, and the voice nasal, the gangrene has extended to the nasal parts; when this occurs, an irritating discharge flows from the nares, the circumference of which becomes inflamed.

586. When gangrene is about to extend into the air-tubes, it is preceded by pain in these parts, together with difficulty of respiration, cough, and aphonia.

587. When it extends to the œsophagus, deglutition becomes impossible. When the isthmus faucium is affected, the affection is at once recognized by the appearance which the part presents, by the sense of suffocation, and impossibility of deglutition.

588. It partakes of the characters of angina.

589. *Anatomical Characters.*—The amygdalæ, velum palati, pharynx, mucous membrane, the cheeks and nares, œsophagus, larynx, and trachea, are either together or separately covered with eschars, which may be white, grey, or black, adherent or detached; these can scarcely be said to be putrescent, or in a state of complete decomposition. We also, in general, observe ulcerations, perforations, and loss of substance to a greater or less extent.

[There are two other varieties of sore-throat, which are attended with milder symptoms. In one there is an exudation of a false membrane upon the inflamed surface: hence it is called angina with false membrane,

"angine couenneuse." In the other the exudation is soft, pulpy, and diffluent: it is the angina pultacea.

ANGINA WITH A MEMBRANOUS EXUDATION.

590. *Symptoms.*—These are the same as in the preceding disease, but seldom so severe. The white ash-coloured patches never become black; there are merely some false membranes, which fall off without destroying the substance beneath them, and are thrown up by vomiting or coughing; sometimes they gradually decay, and are in a manner absorbed.

ANGINA (PULTACEA) WITH PULPY EXUDATION.

591. *Symptoms.*—Slight sore-throat, with patches of a pultaceous cheesy matter, of a white, grey, or yellowish colour, spread at intervals over the affected part; easily removed by the fingers, but appearing again in a short time, and ending by being coughed up.

ACUTE INFLAMMATION OF THE STOMACH AND SMALL INTESTINE.—GASTRO-ENTERITIS ACUTUS.

592. *Symptoms.*—This affection is usually marked by the following symptoms:—viz. uneasy sensations of compression and weight are experienced in the epigastric region, accompanied by wandering pains in the abdomen; general lassitude and dull pains in the extremities; restlessness, heat, and dryness of the throat, with thirst, accompanied by a particular desire for cold drinks; the eyes are dull and heavy; the complexion pale and sallow; the appetite usually diminished, sometimes increased; the digestion accompanied with colicky pains, flatulence, hiccough, and nausea. It often begins by a dislike for food, and distention of the stomach; the mouth becomes clammy; the tongue is red at its point and margins.

593. Again, it makes its attack more suddenly, and without any precursory symptoms; first appearing by vomiting and frequent alvine evacuations, with tormina and tenesmus. These symptoms may exist conjointly

or separately, according as the inflammation may be seated in the stomach, or small or great intestines. The epigastrium becomes tender and particularly sensible to pressure; however, this symptom is often altogether absent. The headache is generally constant, and the brain or its membranes may become secondarily affected. In the course of the disease the sensibility and activity of the senses and mental faculties are blunted, which does not necessarily imply any structural alteration of the nervous centre; and even the locomotive powers are more manifestly deranged than in many essential disorders of the brain.

594. The pungent heat and dryness of the integuments is remarkable; the pulse frequent, the tongue red, which depends upon the degree of the inflammation. Stupor and muscular prostration are more frequent in this affection than paralysis or spasms; if these last appear, and affect one side only, they shew that the brain is implicated. The pulse during the progress of the disorder is usually frequent; in the onset it is full, but soon becomes small, concentrated, irregular, and intermittent; when the inflammation is intense, however, this frequency is sometimes less remarkable, particularly if the patient be of a lymphatic temperament.

595. The urine is small in quantity, and red; the external margins of all the mucous membranes are red; the conjunctiva injected; the pituitary membrane dry; the mouth, which is at first clammy, becomes hot and parched when the inflammation is at its height; the tongue, white or yellow in the commencement, becomes red at its tip and edges, and even over all its surface, in the course of the disease. Now and then its anterior portion is found covered with a multitude of small projecting red or violet-coloured spots, between which the mucous membrane is pale or covered with mucus; this appearance rather indicates a slight or chronic gastro-enteritis. More frequently, however, the tongue is covered by a thick adherent coat, which becomes dry and rough as the inflammation becomes more intense.

At this period the tongue, gums, lips, and teeth, are encrusted with a brownish-black matter.

596. The thirst is considerable, and increases as the disease extends from the stomach to the small intestines; the skin is dry and arid, with a pungent heat, which is extended over all the body, or only occupies the chest and abdomen.

597. Finally, towards the conclusion the countenance is indicative of suffering, the eyes are red, hollow, and dull; the nostrils expanded, and the cheek-bones projecting, and of a deep red colour.

598. *Anatomical Characters.*—The external membrane of the stomach is usually natural; sometimes this viscus is distended with air; but occasionally it is contracted. The mucous membrane of the stomach is sometimes studded with red dots, or covered by patches, arising from the effusion of blood into the substance of the membrane itself; at other times a uniform redness is diffused over its whole extent, being particularly conspicuous, and of a deeper shade, around the cardia and pylorus.

599. Occasionally the redness follows the course of the blood-vessels, which are injected and arborescent: this colour is of a vivid red or of a darker shade, almost brown; both shades are alternately mixed or intimately blended one with the other. In some cases an effusion of gas takes place beneath the mucous membrane.

600. Gangrene is rarely met with; ulceration is also unusual, and seldom penetrates as far as the muscular coat. When the mucous follicles are affected, they resemble small reddish pimples.

601. When contraction of the stomach accompanies inflammation, the creases of the mucous coat are conspicuous, and of a deeper tint than the surrounding parts.

602. The exterior of the small intestines usually appears healthy, but when the inflammation is intense the redness of the subjacent mucous coat is visible through its thin parietes; they may be contracted or distended.

603. The redness of the internal coat is interrupted

suddenly in various parts, and is less deeply marked in the duodenum than at the further extremity of the intestine.

604. If the inflammation be slight, the valvulæ conniventes are alone affected, the intervals which separate them appearing perfectly natural. In a more advanced degree, the vessels are strongly injected, and we perceive patches of a paler or deeper red; the membrano is covered with an adhesive mucus. The muscular and serous coats seldom participate in the disease.

605. Gangrene of the intestine is of a very rare occurrence; when it takes place the intestine becomes black, dull, and friable, and emits a gaseous odour. Ulceration, on the contrary, is very common, and is found in the ileum, particularly in the neighbourhood of the ileo-cœcal valve: it is in general confined to the mucous coat, but it sometimes extends to the other tissues, and not unfrequently produces perforations through the intestine.

606. The edges of the ulcers are sometimes quite perpendicular, and at other times rugous, thick, and irregular; their circumference is red or pale; their floor is often formed by the muscular coat.

607. During the process of cicatrization their edges sink down, approach each other, and unite by a little eminence, which in the course of time gives place to a small depression.

608. If the ulcer be large, the cicatrix is formed by a whitish or rosy pellicle, and if it be still more considerable, the mucous membrane is puckered and drawn in, so that the intestine may be contracted in this part.

609. Thickened patches or excrescences are frequently met with in the small intestines, formed of a white, greyish, or red substance, possessing considerable tenacity, and chiefly occupying that portion of the gut which is placed next the ilio-cœcal valve, the rest of the intestine generally remaining sound. These occur most frequently in young subjects.

610. The mucous follicles resemble so many pimples, hard and depressed in the centre, which afterwards

soften and suppurate, or appear in the form of brownish patches, circumscribed and without swelling. The invaginations which are occasionally met with in enteritis are formed by the introduction of the superior portion of the gut into the inferior; or the reverse takes place, which is much more unusual.

CHRONIC INFLAMMATION OF THE STOMACH AND SMALL INTESTINE.—GASTRO-ENTERITIS CHRONICUS.

611. *Symptoms.*—This occurs as a consequence of the former disease, or supervenes in a very slow and gradual manner, with symptoms more mild, but in other respects resembling those of the acute form. There is epigastric uneasiness; often a sensation is perceived as if a transverse and painful band extended from one side to the other, and particularly evident at the right; it may be continuous, interrupted, or remittent, and is increased after meals, more or less, according to the quantity and quality of the food, and is exasperated by the depressing passions.

612. The pain is gnawing, pungent, and burning, accompanied by a sense of constriction in the œsophagus, or of difficulty of deglutition and respiration, with sensation of compression along the base of the thorax, or in some part of it only; it is sometimes attended with a dry cough; occasionally the pain exists solely in the epigastric region, which is then incapable of supporting the slightest pressure. Usually the patient experiences a dislike for food; but now and then he has an extraordinary appetite, which, however, soon gives place to a distaste for every sort of food.

613. The digestion is imperfect, and accompanied by bitter acrid eructations; thirst and a sense of epigastric fulness are not unusual. The ideas become confused, and the head heavy; dulness, somnolency, and a dislike to movements of any description, take place.

614. The skin is hot, particularly in the palms of the hands, the pulse is tense, and generally frequent: vo-

initing takes place when the stomach is overloaded or much irritated; there is habitual and obstinate constipation, giving place occasionally to diarrhœa of short duration.

615. In general the tongue is small, and red at its tip and edges, or even over all its surface, but in other cases it is merely dotted with red specks, or covered with a dry mucous coat. The breath is fœtid; the heat and thirst are augmented after meals; the pulse becomes frequent towards evening; a bitter taste is complained of in the morning; the complexion is sallow.

616. The patients become sad, uneasy, low-spirited, distrustful, and peevish, and suffer hallucinations, errors of judgment, and other mental disorders, particularly if they be of the nervous temperament; the countenance is furrowed, its expression altered, and its colour changed to a pale sallow; whilst the cheeks remain red, or become livid; the muscular powers are weakened, and there is the greatest objection to taking exercise. The skin adheres to the bones and muscles, and insinuates itself into their interstices, and exchanges its natural colour for that of an obscure red or ochery yellow.

617. Such are the symptoms of this disease: but they are never all united in the same case: indeed we often meet with only one or more of them, variously combined, so as to form almost innumerable varieties of this perplexing affection.

618. It may be confounded with peritonitis, scirrhus of the stomach, hypochondriasis.

619. *Anatomical Characters.*—The left end of the stomach is frequently found thinned, and admits of being torn with the greatest facility. The mucous coat, softened, varies in colour from a white or grey to the deepest shade of red; scraped with a knife it is easily detached, in the form of a pulpy matter; occasionally it presents slight erosions.

620. If the vessels be injected, the blood appears of a bluish tint, and patches, varying from violet, to the

darkest brown, are seen on the internal surface; the lining membrane is usually thinned, particularly towards the fundus, so much so as sometimes to occasion perforations with irregular edges.

621. As we proceed from this part the mucous membrane becomes thick and red, which arises, in some cases, from a varicose state of its vessels. Ulcerations are very common, especially near the pylorus, where they penetrate through the coats of the viscus; occasionally it becomes of a slate colour or entirely black, without in any degree changing the consistence of the membrane.

622. The small intestines are generally pale externally, and sometimes contracted or almost entirely obliterated. Ulcers are very common in the jejunum and ileum; they are more extensive and deep than in the acute form of the disease; finally the mucous coat changes to a bluish slate colour, nearly analogous to that of the stomach itself.

CANCER OF THE STOMACH.

611. *Symptoms*—This disease is generally a consequence of chronic inflammations of the stomach, and seldom occurs except in those who have passed thirty, and have been addicted to an immoderate use of spirits or some medical excitants.

621. It may be recognized by a sense of uneasiness and obtuse pain, seated in the region of the epigastrium, and sometimes extending to the œsophagus, hypochondria, or even the lumbar region; giving rise to habitual flatulency, with irritating acid eructations, nausea, and vomiting of a liquid, at first aqueous, then mixed with the undigested food, and afterwards combined with a brownish matter, becoming more and more frequent, and finally habitual.

625. All aliments are not equally offensive, and not unfrequently the most indigestible are those which agree best with the stomach. The epigastrium at this period becomes the seat of a tumour, which is irregular, and

sometimes projects so as to be perceptible externally either to the sight or touch. This affection usually gives origin to a cough, attended with an abundant aqueous expectoration. The skin soon becomes dull and yellowish; the appetite is completely destroyed, and the patient wastes or becomes œdematous; the matter ejected from the stomach assumes a sooty blackness; the countenance is shrivelled; the pains acquire more and more intensity; the diarrhœa gives place to constipation; the fever increases; and the patient expires, preserving to the last the intellectual faculties entire.

626. We may judge from the following symptoms what particular part of the viscus is chiefly affected. If the pylorus be the part exclusively or chiefly affected, the vomiting is very abundant, and occurs at a certain precise period after taking food; the epigastrium is much more distended with flatus; the tumour is seated more towards the right side, between the false ribs and the navel; diarrhœa does not supervene till after its obstruction, or the ulceration of its edges.

627. If the cancer be seated in the cardia there is no tumour of the epigastrium; the pains are only felt in the superior part of the stomach and in the back; the patient often brings up a mouthful of mucous matter, or even of the undigested food, and is harassed by an abundant salivation.

When the affection attacks the body of the viscus, the lesser curvature more generally suffers; the sufferer takes little food or drink, as they will always occasion a very painful distention, and are ejected up almost as soon as swallowed.

628. Universal degeneration of this viscus produces almost unceasing pains, and is attended with scarcely any vomiting,—a circumstance which may also be remarked when this organ has contracted adhesions with the adjacent viscera.

Nausea only occurs when the pylorus is contracted;

the stomach partially ulcerated or recently perforated; or when some abdominal inflammation is existing.

629. This disease may be mistaken for certain chronic nervous vomitings; for chronic gastritis; or may be confounded with aneurism of the abdominal aorta, or tumours formed by the accumulation of fæcal matter in the colon.

630. *Anatomical Characters.*—When the change of structure is seated in the pylorus the stomach is enlarged: in almost all other cases this viscus is found smaller than in the natural state. It is filled with a blackish liquid, which exists in the absence as well as presence of ulcerations. The thickness of the morbid part varies from two lines to half an inch or more: its internal surface is uneven, ulcerated, and covered with a whitish grey or blackish fungous matter, in the intervals of which numerous depressions are perceived. Its external surface may be either free or adherent to the liver, peritoneum, or other neighbouring parts. The morbid matter is composed of the cancerous structure, of cerebriform matter, or sometimes of both combined. In the beginning the mucous may be distinguished from the other coats of the stomach; it is of a dull white and homogeneous structure, whilst the muscular coat becomes more firm and thick, and of a bluish colour. Sometimes, though rarely, the disease spreads from the cardia to the œsophagus, and from the pylorus to the duodenum.

VOMITING OF BLOOD.—HÆMATEMESIS.

631. *Symptoms.*—Flatulence, anxiety, general lassitude, pain of the stomach, coldness of the extremities, and vomitings of blood at longer or shorter intervals: the blood is sometimes pure, never frothy, but more usually black, clotted, or mixed with the matter contained in the stomach: these are attended with cough, but no fever, and accompanied with a distention of the left hypochondrium. When the blood accumulates to a

certain extent in the stomach, the stools often appear bloody.

632. It may be confounded with hæmoptysis.

633. *Anatomical Characters.*—Sometimes the mucous membrane of the stomach is of a brownish black, and its vessels appear gorged with blood; the hæmorrhage arises from simple exhalation from the surface. Sometimes the membrane is red, and presents at intervals patches resembling ecchymoses covered with adherent blood, and retaining their colour, though submitted to frequent ablution.

ACUTE INFLAMMATION OF THE LARGE INTESTINE.—COLITUS ACUTUS.

634. *Symptoms.*—Slight diarrhœa, unaccompanied by disturbance of the constitution, if there exist only irritation or slight inflammation; usually wandering pains of the abdomen, particularly about the navel, increasing in severity by starts; eructations, a sense of weight in the pelvis preceding the evacuations, and again recurring some time afterwards; frequent scanty dejections, consisting of a mucous, serous, or bilious matter, giving rise to a sense of heat at the margin of the anus, to tenesmus and straining, particularly if they occur at very short intervals. When colitis exists to this extent, it is complicated with gastro-enteritis, and consequently with fever, and the other symptoms peculiar to this disease.

DYSENTERY.

[Dysentery (dysenteria—δυς male, difficulty; εντερον, an intestine—bloody flux, fluxus dysentericus) presents several varieties as to the rapidity of its course and the degree of its activity: hence the division generally adopted into the acute and chronic forms. It may occur in detached cases, or prevail as an endemic or epidemic disease. It may be complicated with deranged action of the liver, or be accompanied by much nervous depression. The acute form presents many of the symptoms of enteritis with those of colic.]

635. *Symptoms.*—Often epidemic, having the peculiarity of becoming contagious, when it is joined to typhus fever; commencing by slight symptoms, or by a general prostration of strength, with severe pains in the abdomen, becoming more and more insufferable, and producing a sensation of twisting along the course of the colon, from its origin to the anus; frequent calls to stool, attended with considerable and often unavailing efforts, followed by the dejection of some filamentous mucus mixed with red streaks, or even pure blood, which only gives momentary relief; painful strainings, pungent and burning sensations in the rectum in the intervals of griping; abdominal pressure does not occasion very great pain; the weakness, which is sometimes extreme, is generally in proportion to the violence of the gripings and frequency of the evacuations.

636. It may be confounded with peritonitis, colic, or cholera.

637. *Anatomical Characters.*—Externally the large intestines usually appear natural; they are contracted if the inflammation be recent, and very much dilated if it be of longer standing. Internally, the ilio-cæcal valve, and large intestines, present numerous red dots, and occasionally large dark patches. Ulcerations are not unfrequent. The parts bounding the ilio-cæcal valve are frequently studded with brown or reddish pustules, occasioned by the inflammation of the mucous follicles. In dysentery the ilio-cæcal valve and the commencement of the colon are the parts principally affected; the sigmoid flexure and rectum more slightly. The mesenteric glands, corresponding to the inflamed parts, are often found red and tumefied.

CHRONIC INFLAMMATION OF THE LARGE INTESTINE.—COLITUS CHRONICUS.

638. *Symptoms.*—This succeeds the acute form, or exists primarily in a mild or mitigated character: in this last case it frequently arises from a chronic affection of a neighbouring viscus. The tormina and tenes-

mus are slight, or perhaps do not occur. The diarrhœa is abundant, but less frequent than in the former affection; the evacuations vary in colour, consistence, and quantity; the food sometimes passes unaltered along the whole track of the intestinal tube—a state which constitutes what is called *lientery*. The countenance becomes pale, furrowed, and of a dirty yellow colour; the skin is dry, rough, and assumes a clayey aspect; morning sweats occur, the extremities become œdematous, and the sufferer usually is carried off by an acute gastro-enteritis, which supervenes on the primary disease.

639. It may be confounded with enteritis of the small intestines, with hypochondriasis, or cancer of the intestine.

640. *Anatomical Characters.*—Thickening and ulceration of the ilio cœcal valve are discovered, with unusual density of the lining membrane, which appears of a brownish black colour. The inflammation is sometimes pustular, sometimes diffused; the inflamed follicles resemble white or reddish fleshy pimples depressed in the centre; in a more advanced stage they are filled with pus, and assume a whitish colour, whilst their base is surrounded by a red circle. The subjacent cellular tissue occasionally passes into suppuration, and then the mucous membrane may be detached in shreds more or less extensive.

CANCER OF THE INTESTINES.

641. *Symptoms.*—Habitual constipation occurring after a chronic enteritis; pains, transient at first, but after some time becoming constant, and accompanied by eructations and painful distention of the abdomen, without loss of appetite, or perceptible alteration of the pulse; progressive wasting, and occasionally liquid alvine evacuations, containing blood or purulent matter. The distention of the abdomen is more considerable according as the disease is distant from the pylorus, and obliterates more or less perfectly the calibre of

the intestine. When the cancer is large, it presses against the integuments, and may be discovered by pressure with the hand.

642. This affection is extremely difficult to be detected, and may be confounded with tumours having their seat in the cavity of the abdomen.

643. *Anatomical Characters.*—Similar to those of cancer of the stomach.

DIFFICULT DIGESTION.—DYSPEPSIA.

644. *Symptoms.*—A sense of weight and fulness in the stomach, usually supervening some hours after meals, particularly when the food has been too abundant, or of bad quality, and accompanied with distention and sensibility of the epigastric region, with general uneasiness, nausea, some difficulty of respiration, pain and heaviness over the orbits, and eructations, and sometimes hiccough, signs which may disappear in part after the occurrence of vomiting. Occasionally diarrhœa, flatulency, and borborygmi, are added to these.

645. *Anatomical Characters.*—The stomach is filled with half-digested matter, and distended, as well as the intestines, with an acid gas; the jejunum is usually filled with blood, and the ilium contains a liquid matter, which has already the appearance of excrement. Sometimes the gastro-intestinal mucous membrane appears slightly inflamed. We sometimes discover the food or drink in the trachea, which had entered it whilst vomiting.

CHOLERA.

646. *Symptoms.*—Vomitings, and very frequent alvine dejections of a green, whitish, or brown mucous or bilious fluid; supervening suddenly, and continuing with such violence as to threaten speedy dissolution, accompanied with violent pain of the stomach, severe gripings, not increased by pressure, extreme præcordial anxiety, anguish, syncope, and in most cases cramps of the ex-

tremities. In this disease, which may occur as an endemic or epidemic, especially in hot climates. the pulse is small and contracted, the extremities cold, and the countenance, even from the commencement, suffers a peculiar and very remarkable change: this affection sometimes proceeds from irritating, indigestible matter, taken into the stomach.

647. It may be confounded with gastritis, enteritis, peritonitis, or intus-susceptio.

648. *Anatomical Characters.*—When death occurs in a few hours after the invasion of the disease, the mucous membrane undergoes no alteration; in some epidemics, however, the intestines are found inflamed and contracted; when death takes place, after some days, the lining membrane appears more or less strongly injected.

[*Cholera* means literally a "bile flux;"—χολη, bile; ρεω, to flow.] Dr. Good gives another derivation, on the authority of Trallian, who made it synonymous with intestinal flux (χολας and ρεω). It is characterized by anxiety, griping pain, spasms in the legs and arms, vomiting and purging, or flatulent eructations and dejections." Systematic writers generally notice three leading forms of the disease: the "bilious" cholera, the "flatulent," and the "spasmodic." To these is to be added the epidemic cholera; such as has of late years appeared in this and other countries, and which is, by most persons, regarded as a disease distinct from the others.

The *bilious cholera* may occur in detached cases, or prevail so generally as to assume the character of an epidemic. This most usually happens, in this climate, towards the close of summer or in autumn. It was from this that Sydenham drew his description. It comes on with "severe vomiting and painful evacuations of ill-conditioned fluids; agony (and inflammation?) of the intestines and abdomen; cardialgia, thirst, a quick pulse, often small and unequal; heat and anxiety, nausea, and colliquative sweat; spasms of

the legs and arms, faintness, coldness of the extremities, and other symptoms of equal danger, which terrify the by-standers, and kill the patient in twenty-four hours." In mild climates it is seldom so fatal, as may be inferred from the concluding sentence in this extract, unless when it prevails as an epidemic. Most of the symptoms here enumerated may occur in cases of surfeit, *cholera cibaria*; but in the latter the spasms are not so severe, nor is the attack so violent.

The *flatulent cholera* more nearly resembles colic: it was called cholera sicca, from the absence of fluid discharges. The secretion of bile is diminished, or its excretion obstructed: it may, perhaps, be regarded as a modification of the disease, occurring in dyspeptic persons. "The vomiting and purging are rare or absent; great and oppressive flatulence; retching; flatulent dejections and eructations." Both these forms of cholera—the bilious and the flatulent—seem to be induced by exposure to cold and damp; by sudden transitions from hot sultry weather to cold and damp; by accumulations of acrid ingesta; by eating substances difficult of digestion, particularly unripe fruits.

The *spasmodic cholera* is found as an endemic disease in tropical climates; where it occasionally becomes epidemic, and "nearly approaches the remarkably fatal *pestilential cholera* which appeared in Bengal in 1817, and which has subsequently spread all over Asia, Europe, and part of Africa." [Dr. Copland's Dictionary, art. Cholera.] The term "spasmodic" appears to have been applied by Mr. Curtis, who drew up his description of the disease in 1807. It usually commences with a feeling of languor and chilliness, with a sense of uneasiness at the epigastrium (?) This state lasts for a variable time, perhaps a few hours; when spasms "begin to affect the muscles of the thighs, abdomen, and thorax, and lastly pass to those of the arms, hands, and fingers; but (proceeds Mr. Curtis) I never observed those of the neck, face, or back, affected. The spasm induces a fixed cramp in the belly of the

muscle, which is gathered into a hard knot, with excruciating pain. In a minute or two it relaxes, and is again renewed, leaving the sufferer hardly a moment's cease; and lastly it passes from one set to another, leaving the former free." Mr. Curtis and other observers dwelt upon the spasms as the prominent and characteristic feature of the disease, as it then appeared. Dr. Copland, who had an opportunity of tracing the progress of spasmodic cholera in 1816, and who "experienced it in his own person," proceeds with a full enumeration of the other symptoms. "The pulse is small, quick, and contracted; and whatever is taken into the stomach is instantly rejected. As the disease proceeds, the pulse becomes smaller and weaker, the spasms more general, the purging constant and painful, generally with tenesmus; the vomiting is renewed upon the injection of substances into the stomach, and the powers of life rapidly fail. During this time the fluids evacuated from the stomach and bowels present no trace of bile; however, occasionally bile is seen in the evacuations to a small extent. In the course of a few hours the features shrink, the hands and feet become cold and clammy, a cold clammy sweat is poured out on the face and breast; the pulse becomes extremely small, or nearly disappears."—"When the disease is treated with decision the vomitings cease; free evacuations, with discharge of bile, take place, and the patient soon recovers. But if neglected, or improperly managed, the powers of life rapidly fail; the eyes sink, and are surrounded with a livid circle; the countenance assumes a remarkably anxious cast, or is pale, wan, and shrunk; and the spasms extend to the very fingers. The breathing now becomes extremely laborious; the patient is restless, and at last is carried off in the space of ten or twelve hours from the commencement of the attack." Every circumstance here stated indicates the existence of irritation in the gastro-intestinal mucous membrane, with increased action of the surrounding

muscular fibres. The disturbing influence is transmitted to the cerebro-spinal system, and thence to the muscles of animal life and to the secreting organs, particularly the liver, and perhaps the salivary organs; also to the respiratory and circulating system.

The *epidemic cholera* is said to have commenced in Bengal in 1817, and to have reached Madras in 1818. It then continued to spread through all parts of the Indian territory until 1821, when it began to abate. Even still cases of it occur from time to time, but they are comparatively mild and manageable. The symptoms of the disease differ little, if at all, except in intensity, from those above detailed under the head spasmodic cholera; which leads to the opinion that it is but an aggravated form of this disease.

According to Mr. Annesley (see his Sketches of the Diseases of India) the progress of the disease is generally as follows:—The patient feels for some hours, or for a longer or shorter time, according to circumstances, a sense of uneasiness and anxiety about the epigastrium, with a feeling of heat in this situation. The countenance at first expresses uneasiness, then indicates anxiety and distress. The pulse at this time is generally quickened, always oppressed. This constitutes "the stage of invasion;" and it is of the utmost importance, in reference to the treatment of the disease, to ascertain its existence at this early period.

The patient, either concurrently with these symptoms or soon supervening upon them, complains of sickness of his stomach, and feels an uneasy sensation along the intestinal canal. Copious discharges from the stomach and intestines soon take place; then follow a sense of exhaustion and sinking. Spasms and pain are felt in the extremities, particularly in the calves of the legs. The evacuations are abundant, and consist of any matters that may have existed in the passages when the attack set in. The spasms soon seize the abdominal muscles, then those of the thorax, and but seldom reach

those of the back, loins, or face. The spasms usually present the clonic form; in some instances they are tonic at first, and then alter to the other character. The extremities and surface of the body become cold; the oppression and feel of anxiety at the præcordia increase; breathing becomes laborious; and every thing indicates a state of collapse. A cold clammy sweat covers the skin, which "increases to a copious, cold, raw moisture, which bedews the shrunk, sodden, cold integuments, particularly of the extremities." The countenance presents a shrunk, collapsed, cadaverous appearance; the eyes are sunk and surrounded with a livid circle; the pulse small, quick and oppressed, and scarcely perceptible. "Blood taken at this period is quite black, thick, and oily; and it frequently will not flow from the vein. The arterial blood presents the characters of that which is usually circulated in the veins." The patient continues to complain of a burning sensation at the epigastrium, and of unquenchable thirst; yet the tongue is white, moist, and cool. The vomiting and dejections increase in frequency, and the stools consist of a fluid like rice-water, with flakes of mucus and albuminous matter floating in it; but there is no mixture of bile with these matters. As the disease proceeds, the evacuations and spasms generally cease towards its close. "The urine seems not to be secreted, and not only it, but the saliva and all glandular secretions, appear to be completely arrested during the progress of this dreadful malady."—"Towards the fatal termination of the disease, the sense of anxiety and oppression at the præcordia increases. The restlessness degenerates into a sort of jactitation, the vital actions sink, and the patient dies generally within twelve, fifteen, twenty, or twenty-six hours from the invasion of the disease.—(*Annesley*, p. 19.)

[I subjoin a short summary of the post-mortem appearances in the different parts:—

[*In the Abdomen.*—The stomach usually contained some watery, grumous fluid; which was in some cases

colourless, in others tinged green, yellow, or brown, verging to black. The capillary vessels under the peritoneal and mucous coats are filled with dark-coloured blood, shewing decided general congestion, with ecchymoses in detached points. Similar evidences of congestion existed in the small intestines, and they were distended with flatus in some parts, and contracted in others. A viscid clay-coloured substance, in many instances (particularly in those who died of a short and violent attack), covered the mucous membrane. The large intestines were sometimes distended, at other times contracted; and occasionally these opposite states existed at different points of their extent. Congestion existed here too. The fluid contents were similar to those of the stomach and small intestines, but there was no fæcal matter. The liver was generally congested and gorged with viscid black blood, and was flabby and friable. The state of the spleen was nearly similar. The gall-bladder distended with dark bile, unless temporary re-action had taken place, when it was generally empty. The kidneys, nearly natural in colour and consistence, shewed no evidence of any derangement which could account for the suppression of their secretion. The urinary bladder generally empty and contracted.

[The large veins and the right side of the heart were filled with dark thick blood. The substance of the heart appeared softer than usual. The lungs were greatly congested. The cerebral sinuses were also loaded with dark blood, and the brain, though sometimes soft, shewed no decided evidence of increased action.]

INTUS-SUSCEPTIO.

649. *Symptoms.*—In general the diagnosis is extremely difficult. The disease usually commences by obstinate constipation, which does not yield to purgatives: it may happen that an enema may bring away some fæcal matter accumulated in the large intestines,

but this does not continue to take place, and even the flatus ceases to escape. The abdomen soon swells and hardens, occasionally in an unequal manner, so that the convolutions of the intestines are perceptible externally. To these succeed nausea, hiccough, colic pains, and in some cases a fixed pain in a particular part of the abdomen; thin mucous, bilious, and infirm stercoraceous vomitings occur; these last, however, are not common. In some instances obstinate constipation, prostration of strength, and coldness of the limbs, are the only symptoms that precede death.

650 It may be confounded with peritonitis, ileus, or constriction of the colon.

651. *Anatomical Characters.*—On some occasions the strangulation is produced by bands, or adhering false membranes, the consequences of former inflammations existing between the affected part and the epiploon, or convolutions of the intestines; the intestine slips in between these productions, and becomes compressed and strangulated; in other cases, without the intervention of any of these causes, it becomes twisted and contorted on itself; the knot which results from this becomes more and more strained as the tube increases in volume, from the distention caused by the evolution of gas, or by the enemata or drink given to the patient.

SPASMODIC COLIC.

652. *Symptoms.*—This disease commences suddenly with a sensation of twisting, usually occupying the umbilical region, or the course of the colon; the pain is not increased by pressure: on the contrary, it is usually alleviated; it is accompanied by borborygmi, constipation, small contracted pulse, anxiety, and a particular expression of countenance.

653. It may be confounded with peritonitis, colitis, or cholera morbus.

654. *Anatomical Characters.*—The viscera of the abdomen suffer no perceptible alteration.

PAINTERS' COLIC.—COLICA PICTÔNUM.

655. *Symptoms.*—Acute pains in the abdomen, attacking those persons only who have been employed in working lead, or some of its preparations; not increased, being even relieved by pressure; pain and difficulty at stool, then constipation; retraction and hardening of the abdomen, nausea, and vomiting; pain in passing urine, sometimes stranguary; wandering pains of the extremities, with paralysis, or extreme weakness of the extensor muscles of the fingers; occasionally convulsions of the superior extremities; slowness and hardness of the pulse; in some cases severe headache, dyspnœa occurring at intervals, and a sensation of constriction at the præcordia, coincident with the numbness of the arms.

656. It may be mistaken for peritonitis or enteritis.

657. *Anatomical Characters.*—None to be discovered.

CANCER OF THE RECTUM.

658. *Symptoms.*—Weight and pain about the anus; burning pain, especially whilst at stool; tenesmus, with or without griping, borborygmi, and a scanty sanguineous or mucous discharge. On introducing the finger into the rectum, its orifice is found hard, contracted, and unequal; irregular furrows, or a circular induration, are perceived on its internal surface, not sensible to pressure; soon after lancinating pains are felt, which are seldom increased by pressure. The anus becomes more and more contracted, and violent tormina occur; the fæcal matter, if it be soft, is always voided in a cord-like form, and causes great agony in its passage. When ulceration is established, a sanious or purulent discharge takes place, which is attended with diarrhœa or obstinate constipation.

659. Cancer of the rectum may be mistaken for lymphatic indurations in the neighbourhood of the parts, for venereal ulcers, or certain species of hæmorrhoids.

660. *Anatomical Characters.*—The disease is not always confined to the verge of the anus, it sometimes extends up the gut for two or three inches, or more; the appearance of this cancer, and its morbid structure, are perfectly similar to that which occurs in the œsophagus, and which has already been described.

HÆMORRHOIDS.

661. *Symptoms.*—A determination of blood towards the end of the rectum, recurring periodically, or irregularly; accompanied with a sense of weight, tension, and itching about the anus; with a sense of bearing down in the loins and perineum, and with frequent calls to stool; giving rise to an oozing of a sanguineous, or more rarely of a mucous matter, and producing in its course the development of tumors, which may be either dry, or contain a bloody fluid, painful or indolent, or sometimes dependent upon a varicose state of the veins of the rectum, or they may be cellular in their structure, and formed at the expense of the gut itself.

662. Piles may be mistaken for venereal excrescences, or fungoid tumours in the rectum.

663. *Anatomical Characters.*—Piles appear under the form of tumours, varying in size, and more or less thickly set, arising from the dense cellular tissue which connects the mucous to the muscular coat, contained in a sort of cyst, thin, smooth, or sometimes villous on its interior, and adhering by its external surface to the sub-mucous cellular membrane. In many instances these tumours are formed of a reddish vascular spongy tissue, or of a sort of parenchyma or fungous flabby tissue, analogous to the erectile. Sometimes they depend upon a partial dilatation of the veins, which may be easily proved by the introduction of a probe into the vessels.

WORMS.

664. *Symptoms.*—Vary according to the species of the worms; direct symptoms are sometimes observable; such as sudden disgust for food, increase of appetite,

nausea, vomiting, pain of the belly, hiccough, borborygmi, tenesmus, flatulency, &c ; occasionally sympathetic signs, the principal of which are dilatation of the pupils, itching about the nose, disturbed sleep, perspirations, irregularity of the pulse, and disagreeable breath.

665. They may be confounded with inflammation of the intestines, hypochondriasis, or inflammation of the brain.

666. *Ascarides Lumbricoides.*—A sense of itching with sharp pains in one or more points of the intestines, particularly about the navel; the ejection of one or more worms by the mouth or anus.

667. *Ascarides Vermiculares.*—Dull irritation and itching about the anus, increasing towards evening; the escape of many of the worms with the stools.

668. *Tænia.*—Twisting and weight in the abdomen, with a sense of pinching or gnawing in the vicinity of the stomach; swelling and irregular retraction of the lower part of the abdomen; enormous appetite; ptyalism; the rejection of part of the worm by stool or vomiting.

669. *Anatomical Characters.*—Differing according to the species of the worms.

670. *Ascaris Lumbricoides.* — Body whitish, or of a reddish grey; round, from four inches to a foot in length, very elastic; tail terminating in a blunt end; head furnished with three oblong tubercles, between which the head is placed.

671. *Ascaris Vermicularis.* — Body very thin, and from two to nine lines in length; tail terminating in a very fine and transparent point; head furnished with two vesicles, lateral and transparent, or with three tubercles.

672. *Tænia.*—Flat and articulated, having at its smaller extremity a tubercular head and mouth, surrounded by four suckers; there are many varieties of them.

INFLAMMATION OF THE LIVER.—HEPATITIS.

673. *Symptoms.*—A heavy, dull pain occurring in the right side, increased by pressure, deep inspiration, or

cough; sometimes, however, it is alleviated by doubling the body forwards; in some cases an acute pain is felt in the right shoulder and along the vertebral column; the size and consistence of the liver may be augmented; in which case it projects beyond the false ribs and extends more or less into the abdomen. The patient lies on the right side, and finds it sometimes almost impossible to rest on his back or left side. Respiration and digestion are impeded, and there is occasionally a slight dry cough; very generally a yellow tinge is communicated to the skin and conjunctiva; the urine is of a saffron colour; there is constipation, and the fæcal matter is found greyish and discoloured. If the disease terminate in suppuration, a fluctuating tumor may be felt beneath the integuments of the right side. This affection, which is of more frequent occurrence in hot countries than in our temperate climate, is often difficult to be detected: writers have constantly assigned to it the symptoms which belong to the inflammation of the peritoneum, on its concave or convex surface.

674. Hepatitis may be easily confounded with pleurisy, or with inflammation of the peritoneum, enveloping the substance of the liver.

675. *Anatomical Characters.*—The size of the liver is not increased by acute inflammation; its investing membrane adheres less firmly to it than in the healthy state; its surface is brown or reddish, and marbled. The substance of the organ becomes brittle and friable in proportion to the degree of the inflammation; and when cut, blood oozes from its surface, but cannot be said to flow from its vessels, as in the natural condition. It is also granular, the granulations consisting of the parenchymatous structure; they are, however, increased in size; some of them are red, more or less bright; others yellowish, which gives rise to a striated appearance. In this state the liver resembles much the aspect of an inflamed lung before it has become completely solid; but when pressed between the fingers it is very friable, and is reduced to a soft pulp like an inflamed

spleen, which arises from the quantity of sanguineous fluid which is poured into its texture; its weight is evidently increased; the lining membrane of the different biliary canals is injected, and of a reddish-brown colour. These are the appearances presented by the liver when inflamed, and before suppuration has set in. When the latter takes place, the pus is infiltrated into the substance of the liver; sometimes it is found in several small abscesses, and mixed with blood, which gives it a greenish-yellow colour; sometimes it is united into one large cyst, which may make its way either into the abdomen, into the chest and bronchial tubes, into the intestines directly, or by means of the biliary canals, or lastly, may point externally through the integuments of the abdomen, and so be evacuated.

CANCER OF THE LIVER.

676. *Symptoms.*—The marks of this affection are very uncertain; it cannot be detected till the organ extends itself below the edges of the false ribs, and affords an opportunity of perceiving the projections (varying in size and number), which exist on its surface. The digestion is attended with pain and difficulty, but without vomiting, and is most generally accompanied by constipation, colic, borborygmi, and more or less acute pain of the right hypochondrium and shoulder of the same side, with uneasiness in the epigastric region: emaciation commences; the skin and conjunctiva become jaundiced; the limbs are affected with œdema; and ascites soon supervenes, which speedily carries off the patient.

677. It may be confounded with any of the diseases of which this organ is susceptible.

678. *Anatomical Characters.*—The liver commonly extends across the epigastrium; sometimes occupying the left hypochondrium. Its surface is covered with furrows, occasionally pretty deeply marked. When the substance is cut into, tumours are met with in different part, of a cancerous nature, and mixed with tuberculous or encephaloid matter in various degrees of ad-

vancement. The structure of the viscus surrounding these is usually natural, and is, in many cases, attached to the tumours (which are now and again very numerous), by vascular connexions only, which admit of being easily separated; in other cases, however, the connexion is more intimate, and the parenchyma of the organ seems gradually to degenerate. When these morbid degenerations, which compose the cancerous substance, become softened, the whole is converted into a pultaceous mass, which increases by degrees, at the expense of the lower tissue of the viscus. This softening, however, is seldom general, several of the tumours usually preserving their original consistence.

ENCYSTED DROPSY OF THE LIVER.

679. *Symptoms.*—A smooth shining tumour, little or not at all painful, without discolouration of the integuments, and with evident fluctuation, seated in the right hypochondrium and epigastric region; not being displaced by change of position. The patient is unable to lie on the back or left side.

680. It may be mistaken for encysted abscesses in the liver.

681. *Anatomical Characters.*—These cysts are sometimes formed of fibrous tissue, sometimes of serous; their size is very variable; they are developed occasionally in the substance of the liver, and contain a serous or semi-gelatinous liquid, containing, in some instances, a greater or less number of hydatids.

BILIARY CONCRETIONS.

682. *Symptoms.*—Very difficult, generally impossible, to be distinguished; the presence of the concretions in some cases gives rise to a sort of pressure in the epigastric region, to violent colic, to eructations, to obstinate vomitings, and to acute pain, seated in the course of the common duct, and increased after taking food. These symptoms become more certain if the patient has voided any biliary calculi, either by vomiting or stool.

INFLAMMATION OF THE SPLEEN. (*Splenitis.*)

683. *Symptoms.*—This affection is seldom observed during its acute stage: it is marked by pains felt under the left false ribs; increased by pressure or by motion. The patient finds it disagreeable to rest on his side. The skin is discoloured, being of a yellow tinge, but not sufficiently deep to simulate jaundice. In some cases of splenitis blood is occasionally vomited. It occurs epidemically in low and marshy districts, and on the sea-shore. When chronic, it is more easily recognised; for, besides the symptoms above-mentioned, a hard, large tumour is felt in the left hypochondrium, which is sensible to pressure. Splenitis is a common consequence of intermittent fevers.

684. It may be confounded with gastritis, peritonitis, or tumours in the left hypochondrium.

685. *Anatomical Characters.*—The substance of the spleen is sometimes softened, gorged with blood, and almost diffluent; its size is generally much increased; it is sometimes filled with pus, accumulated into a mass, or diffused in its substance. The spleen has often been found filled with tubercles, either indurated or softened. Its external membrane is sometimes torn through, at others it is thickened and hardened, being almost cartilaginous.

INFLAMMATION OF THE PERITONÆUM.—PERITONITIS.

686. *Symptoms.*—Acute pain, producing an extreme degree of weakness, occurring over the whole extent or part of the abdomen, increased by the slightest pressure; obstinate constipation and burning heat of the abdominal integuments; pulse small, contracted, concentrated, and frequent; particular expression of countenance; the patient lies on his back, with his thighs drawn up; urine scanty; in many cases vomiting and hiccough. The tongue is white, covered with mucus, and more or less dry; the respiration is difficult (parti-

cularly during inspiration), frequent, and chiefly carried on by the ribs.

687. If the disease attack women after their accouchement, the breasts become collapsed, and the lochia suppressed; the pain in that case usually commences in the hypogastric region. The symptoms of peritonitis are not always so well marked, particularly if it come on more slowly; or if the chronic form succeed the acute, it then becomes difficult to detect it, for the pain is often very obscure: the belly little distended, the pulse unaltered, and the constipation less conspicuous. The increased size of the abdomen, and the evident fluctuation which soon succeed, are the symptoms chiefly to be depended on.

688. When it occurs in consequence of perforation of the intestine, it is rapid and violent in its progress, and soon causes death.

689. It may be confounded with enteritis, hepatitis, and splenitis.

690. *Anatomical Characters.*—Numerous red spots are discovered on the peritoneum, penetrating its whole thickness, and separated one from the other by parts of the membrane, retaining their natural colour; in some cases the serous membrane is injected or thickened.

691. Inflammation more generally occupies the covering of the intestines, than the part which lines the walls of the abdomen. False membranes, varying in thickness and softness, according to the duration of the disease, are found spread over the peritoneum; these insert themselves into the intervals of the intestines, and unite them one to the other. The cavity of the abdomen is filled with a whitish milky liquid, of a very fœtid smell, containing suspended a great number of small albuminous streaks of a white, greyish, or red colour; the contained fluid sometimes consists of a bloody serosity, more or less limpid, particularly if the disease has lasted but for a very short time, death having quickly supervened.

692. Peritonitis sometimes also shews livid patches,

and real gangrenous spots. In the chronic form the albuminous concretions possess more solidity, and these bands which unite the intestines often become cellular; finally, peritonitis often gives rise to hard, semi-transparent granulations, and the serosity which then exists in the cavity is limpid, and contains a few albuminous streaks; it resembles whey, slightly turbid.

DROPSY.—ASCITES.

693. *Symptoms.*—Tumefaction of the abdomen, commencing from below upwards, and unaccompanied by the symptoms of peritonitis; a sensation of fluctuation upon striking the parietes of the abdomen, which appear smooth, then stretched and covered with turgid veins; the liquid changes place when the patient changes his position; the urine is much less abundantly secreted than in health; and difficulty of respiration, varying in intensity, according to the distention of the abdomen, is complained of.

694. It may be confounded with encysted dropsy and tympanitis.

695. *Anatomical Characters.*—Abdomen distended to a greater or less extent by a citrine transparent serosity, without the slightest trace of albuminous streaks; peritoneum sound; there usually exists some organic alteration of some one of the abdominal viscera, generally the liver or spleen.

DISEASES

OF THE

URINARY ORGANS.

INFLAMMATION OF THE KIDNEYS.—NEPHRITIS. (*νεφρος, the Kidney.*)

696. *Symptoms.*—A sense of dull pain, or weight, is in general perceived in one side only of the lumbar region, soon giving place to a sharp deep-seated pain, and causing a sensation of tension and bearing down; occasionally lancinating or pulsatile; increased by pressure, or by lying on the belly or unaffected side; scantiness or suppression of urine, which is, in general, red, tinged with blood, and voided with difficulty; the pain often extends itself from the loins to the bladder, penis, or groin, and is accompanied by a numbness or tremulous motion of the thigh, and with painful retraction of the testicle: vomiting, with general febrile symptoms, usually supervenes. In some cases the pain ceases for a time, but returns again with increased violence; when this happens, we may suspect the existence of calculi in the kidneys, particularly if the urine at the same time contain some calculous matter. When the complaint is chronic, the pains are less; a heaviness is complained of in the loins, and the urine usually becomes turbid, and contains a purulent fluid.

[Idiopathic inflammation of the kidneys, or that which is not determined by the existence of renal calculi, is said to be rather a rare disease. It is quite

true that we do not often meet with that aggregate of symptoms which is set down as characterising that affection, viz. "acute burning pain in the region of one or both kidneys, accompanied by thirst, anxiety, restlessness, colicky pains, with constipation of the bowels; for the most part, with sickness and vomiting:" and again, "the urine, which at first is of a deep red colour, becomes limpid and colourless; and when both kidneys are affected, it is sometimes altogether suppressed." It may be readily admitted that this category of ills is not often filled up; but it would be a very serious mistake to infer, on that account, that inflammation of the kidney did not exist, when there is much general or symptomatic disturbance of the system, with turbid and high-coloured urine, though at the same time there is little or no pain in the loins. In such cases the diagnosis can only be made out satisfactorily by passing in review the different systems of organs of which the body is composed, and determining the integrity of their functions by the absence of any symptoms referable to a lesion of them. By this process we arrive at the conclusion (as in the instance here supposed), that none is affected but the kidney, as its secretion is evidently deranged. The non-existence of inflammation should not be inferred from the absence of local pain, the deranged secretion and the constitutional disturbance, though slight, being sufficient indications of it. Affections of the urinary organs are admitted to be very numerous, and generally difficult to manage; yet idiopathic inflammation of the kidneys is said, by our best authorities, to be of rather rare occurrence. This opinion I am disposed to think is not only very questionable, but that it has also led to some mistakes in practice. There is no reason to infer, from a consideration of the structure of the kidney, or of its connexion with the nervous system, that the degree of sensibility developed by inflammation seated in that organ, when moderate, should be greater than when it occurs in the liver or lungs. We can readily conceive

that the pain may be trivial, or even scarcely appreciable, when the inflammation is confined to the vascular or cortical structure, but that it may be pungent and lancinating if it attacks the tubular part, or the fibrous envelope. It but too frequently happens, I fear, that inflammation of the kidney is little attended to in its early stage, when it happens not to be accompanied by those severe symptoms above noticed: hence it is allowed to pass into the chronic form, and so a permanent derangement of function is established, which, in one case, will produce lithic or other deposits—in another, an excessive secretion of urea—in a third, diuresis or diabetes, or both. In the management of cases of this sort no account is made of the fact, that they either are, or may be, sequelæ of an inflammatory action, and their treatment is conducted without any reference to such a probability. It must be obvious, then, that it is of the greatest consequence to collect every circumstance connected with the early stage of such diseases, so as to determine with certainty whether they did or did not commence with inflammation. If this conclusion be once arrived at, the mind will hardly refuse its assent to another, viz. that some modification of the antiphlogistic treatment should be adopted, in addition to such other means as experience has sanctioned, in the different forms of functional derangement of the organ.]

697. It may be confounded with cystitis, peritonitis, or lumbago.

698. *Anatomical Characters.*—We usually find but one kidney affected, which is red, indurated, and infiltrated with pus; the ureters sometimes participate in the disease, and are then found red, their mucous coat thickened, and covered with pus.

GRAVEL.

699. *Symptoms.*—Urine depositing, soon after being voided, a gravelly matter, more or less fine, hard, and resisting the pressure of the fingers, which is composed

either of uric acid united with animal matter, or of oxalate or phosphate of lime: acute pains, with a sense of heat and heaviness, in the lumbar regions; urine generally voided with pain and difficulty. [There is also a frequent desire to pass urine, the quantity voided at a given time being small, and without affording the usual relief, the sensation still continuing in the bladder; the digestive functions are considerably deranged, or very liable to be so, as in most cases where urinary deposits are concerned; the patient is frequently troubled with acidity of the stomach and flatulency, particularly after any little error of diet, such as the use of fruits or ascescent wines.] This complaint is very commonly met with in gouty subjects.

700. It may be confounded with nephritis or hæmaturia.

701. *Anatomical Characters.*—A gravelly substance, similar to that which exists in the urine, is usually detected in the kidneys, ureters, or bladder. The substance of the kidney is in many cases of a perfectly natural appearance.

DIABETES.

702. *Symptoms.*—The urine is considerably augmented in quantity, and is clear, white, or yellowish, insipid or sweet, and preceded in most instances by frequent calls to make water, and pain in the course of the ureters; thirst insatiable, appetite increased, wasting and extreme debility.

[Diabetes is a disease of which a saccharine state of the urine is the characteristic symptom. Without this restriction the term would include all those affections which are attended by diuresis, notwithstanding the many differences that may exist between them in their symptoms generally, as well as in the state of the urine. In diabetes the urine is almost always of a pale straw, or greenish colour; its smell is commonly faint and peculiar, sometimes resembling sweet whey or milk; its taste is saccharine in a greater or less degree, and

its specific gravity varies from 1.020 to 1.050; occasionally it becomes much higher than this. Diuresis, or an increased flow of urine, is also a marked attendant of this disease. Some cases have been recorded in which 30 pints of urine have been discharged every twenty-four hours, for weeks or even months. The appetite is usually greater than in health; some uneasiness is felt in the stomach after meals; thirst urgent; the mouth dry and parched; tongue white and foul, sometimes unnaturally clean and red; tough disagreeable mucus in the throat; depraved taste; skin dry and unperspirable; considerable emaciation: weariness and aversion to exercise; loss of strength; pain and weakness in the region of the kidneys; irregular and generally costive state of the bowels; some degree of inflammation and uneasiness at the orifice of the urethra; loss of virility; chilly state of the body; cold feel; a tendency to œdema; heat and uneasiness in the stomach and bowels; acid eructations; flatulence; eyes muddy and painful; indistinct vision; vertigo; headache; dyspnœa on the slighest exertion; the breath (and sometimes the person of the patient) exhales a *hay-like* smell; the pulse is variable, but generally in the latter stages weak and irregular. The disease may terminate in hectic fever, or incurable dropsy; or the patient may be cut off suddenly by apoplexy.—See Watt *on Diabetes;* and Prout *on Diseases of the Urinary Organs.*]

703. *Anatomical Characters.*—The kidneys are sometimes found red, and unusually large; at others they present a remarkable flaccidity; their vessels are occasionally much distended with fluid, dilated, and easily torn: in other instances their substance has suffered a sort of disorganization or solution, more or less complete. Again they have been found smaller than natural.

INFLAMMATION OF THE BLADDER.—CYSTITIS.
(κυστις, *the bladder.*)

704. *Symptoms.*—Acute permanent pain and heat in

the hypogastrium, which is sometimes protruded; weight and tension of the perinæum; frequent, painful, and often ineffectual efforts to make water; frequent and painful erections; the urine, at first limpid, becomes turbid and reddish, and is voided with pain and scalding heat; more or less fever generally attends.—[The urine is of high specific gravity: the pulse is generally frequent, hard, and full; sometimes irregular: the skin hot and dry, and the thirst urgent. As the disease proceeds, it seems to extend to other organs; and the rectum is particularly affected. After some time much restlessness and anxiety supervene, with nausea and vomiting, tension of the abdomen, and twitching of the tendons; and the urine flows in drops, involuntarily. To these succeed more or less of swelling in the loins, accompanied by rigors, coldness of the extremities, watchfulness, and delirium. At length convulsions generally come on, in the midst of which the patient expires. Such are the symptoms of the disease when it runs its course unchecked. In the early stage the symptoms will vary somewhat, according to the part of the bladder which is attacked by inflammation, as, for instance, when it occurs at the neck or fundus.]—When the chronic form succeeds the acute, the fever disappears, the heat and tension of the hypogastrium and perinæum are also diminished; the calls to make water become less urgent, and the scalding during emission is considerably less distressing; the patient often voids, with an effort, a viscid fluid resembling the semen in appearance, but differing in smell. On other occasions chronic cystitis comes on gradually; a heaviness and uneasy sensation are felt in the perinæum, and the patient finds a desire to void his urine, which can be accomplished with difficulty; the urine is yellow, and deposits a mucous matter more or less abundantly, similar to the white of eggs; the pain is slight and permanent, or returns at intervals: finally the introduction of the sound is attended with great difficulty and intense suffering.

705. It may be confounded with nephritis, peritonitis, or matritis.

706. *Anatomical Characters.*—Redness of the lining membrane of the bladder more or less considerable, confined to some particular parts, or diffused over its whole surface. When cystitis is chronic, the viscus is lessened and contracted; or, on the contrary, distended by a fœtid urine mixed with blood or purulent matter; its parietes are thickened in proportion to the duration and slow progress of the disease; its internal surface is of a reddish brown colour: we often meet with a network of vessels distinctly developed, similar to varicose veins, and particularly resembling the venous plexus which surrounds its neck: it is in general furrowed more or less deeply, according to its degree of contraction. The mucous follicles are considerably developed, and ooze out, when pressed between the fingers, a glairy matter similar to that deposited by the urine. Ulcerations of the internal coat of the bladder are also frequent, and it then contains more of pus than of this glairy fluid. In some cases gangrene, or even perforations, exist, and finally, it is occasionally changed into the true cancerous tissue.

HÆMATURIA.

707. *Symptoms.*—A passing of blood through the urethra, which may proceed from the kidney, ureters, bladder, or urethra: when it proceeds from an affection of the kidneys, it is attended with a sense of heat and pain in the loins; and not unfrequently by coldness of the extremities: it is only when the blood accumulates in considerable quantities that the hypogastrium increases in size, and becomes tender, and that the calls to pass urine are frequent and urgent. When the disease is seated in the ureters, it causes a sense of pain and tension along the line of their course. Hæmorrhage from the bladder is usually preceded by frequent desire of passing urine, by heaviness and tension above the pubis, extending to the perinæum, groins, and lumbar

regions; sometimes the patient complains of tenesmus; constipation and heat about the anus; the passing of urine is attended with pain and difficulty; the blood is little if at all combined with the urine. When the hæmorrhage takes place from the urethra, a pain is perceived in a particular part of the canal, and the blood is red, liquid, and pure, and generally voided without effort.

708. It may be confounded with nephritis, cystitis, or menorrhagia.

709. *Anatomical Characters.*—Sometimes the mucous membrane which has given rise to the effusion is tumefied and red, and the blood still oozes from it when pressed between the fingers; on the other hand, it is occasionally pale, and shews no marks of congestion; in other instances we find rupture of the vessels, or some other morbid changes in the kidneys, ureters, bladder, or urethra, which has given rise to the hæmorrhage.

DISEASES

OF THE

ORGANS OF GENERATION.

INFLAMMATION OF THE MATRIX OR UTERUS—MATRITIS.

710. *Symptoms.*—Obtuse pain and sense of bearing down in the hypogastric region, sometimes joined to an obscure swelling or circumscribed tumor of the part; the last only occurs when the body of the viscus is inflamed. The pain, which is augmented by pressure, soon extends to the loins, perinæum, pudendum, and superior part of the thighs; to these are added a sense of weight about the rectum, frequent desire to pass urine and stools, and often also constipation and dysuria. When the inflammation occupies the neck of the uterus, it becomes extremely hard and tumefied, and acutely sensible to the slightest touch; it is contracted on itself, and its temperature is considerably augmented; a reddish liquid flows from the vagina, being preceded by colic and pains in the lumbar regions; the breasts are in general retracted and painful. In chronic hysteritis these different symptoms are lighter, and there is usually an habitual flow of matter, sometimes very fœtid, from the vagina.

711. It may be confounded with catarrh of the uterus, or with schirrus of that organ.

712. *Anatomical Characters.*—Augmentation of the

size of the uterus, at least if death occur, a few days after delivery; its walls are swelled, softened, and gorged with blood, and in some instances it is infiltrated with purulent matter.

CANCER OF THE UTERUS.

713. *Symptoms.*—Irregularity of menstruation, sometimes alarmingly abundant discharges, sense of pain and bearing down in the hypogastrium, tenesmus, dysuria, and wandering pains of the breasts; to these in a short time succeed acute lancinating pains in the neck of the uterus; uneasy sensations in the loins, hips, and hypogastrium; an abundant fœtid fluor albus or discharge of sanious matter through the vagina. If at this period the finger be introduced into the vagina, the neck of the uterus is found to have become softened over all its extent, or only in particular parts, the intervening portions appearing hardened. Its orifice is more open than natural, and of irregular form; upon pressing the os tincæ a sanious or sanguinolent liquid escapes, and a flow of this matter is soon established. As the disease proceeds the lancinating pains become more frequent and intense; the neck of the viscus becomes irregular, fringed, painful, and bloody; and if the disease be seated in the body of the womb, it evidently acquires an increase of size, which may be perceived externally; pressure on the hypogastrium augments the pains, which are then extended to the groin, thighs, lumbar and sacral regions. The examination of the neck of the uterus, by means of the speculum invented by Professor Recamier, gives us a certainty as to the nature of the affection, even in the very commencement; hence we should always have early recourse to it.

714. It may be confounded with chronic matritis, schirrus, or some forms of leucorrhœa.

715. *Anatomical Characters.*—In the greater number of cases cancer commences in the neck of the uterus, more rarely in its internal surface. In most instances the cancerous or cerebriform matter which constitutes the

disease, or both united, are interiorly blended with the substance of the viscus; in other cases we only meet with an ulceration of its tissue, the ulcer appearing studded with fleshy vegetations, irregular, and reddish, or whitish, or covered with a fungous matter, or a kind of putrescent substance, varying in colour, and extremely fœtid. When the body of the organ has not been destroyed, we find its structure perfectly healthy at some lines distant from the surface of the ulcer; its volume is not augmented in this case, but its internal surface is livid, tumefied, and discoloured. If, on the other hand, the ulcer first commences in the interior of the womb, its size is greatly increased, and the fungous matter which covers the ulceration is extremely thick; the os tincæ appears livid, blackish, tumefied, and converted into a lardaceous substance. The superior part of the vagina, and the appendages of the uterus, often participate in the disease, and are disorganized.

FIBROUS TUMOUR OF THE UTERUS.

716. *Symptoms.*—A tumor, varying in size, round, and slightly furrowed, which may be perceived by the touch; heaviness and dull pain in the loins, hypogastrium, and superior part of the thighs, frequent hæmorrhage, various irregularities or suspension of menstruation.

717. They may be confounded with cancer of the neck of the uterus.

718. *Anatomical Characters.*—These tumors are attached to the internal surface of the uterus, or to its neck; they consist of a collection of whitish fibres, closely united, and are very firm, and extremely tenacious, much more flexible than cartilage, but less so than cellular substance.

MENORRHAGIA.

719. *Symptoms.*—An abundant flow of liquid or coagulated blood through the vagina, occurring continually, or at short intervals, and accompanied by a sense of

weight in the hypogastrium, loins, and thighs, and with painful contractions during the expulsion of the blood.

720. It may be confounded with cancer, polypi, or fibrous tumors.

721. *Anatomical Characters.*—Redness and tumefaction of the lining membrane of the uterus; in other cases, polypi, fibrous tumors, and other organic affections of this viscus, are discovered.

INCYSTED DROPSY OF THE OVARIES.

722. *Symptoms.*—A partial tumor of the abdomen, occupying one side of the hypogastrium, or both, if the two ovaries be conjointly affected, proceeding slowly and in general co-existent with some irregularity in menstruation: a sense of fluctuation in the tumor, which is not displaced when the patient changes position.

723. It may be confounded with tumors developed in the pelvis.

724. *Anatomical Characters.*—A cellular or fibro-cellular cyst is usually found in the ovarium, containing a limpid citrine serosity, and in some instances a greater or less number of hydatids.

CATARRH OF THE UTERUS.

725. *Symptoms.*—Slight itching of the pudendum, and vagina, sometimes extending to the uterus, and accompanied by a discharge of a serous limpid liquid, which progressively becomes more and more consistent, and assumes a green or yellow, and finally a white colour; from this period it begins to decline, and the urine in its passage ceases to give pain. The mucous membrane of the labia and vagina is red and tumefied, and the patient complains of pain in the groin, perinæum, and hypogastrium, and of scalding during emission of urine. When the affection is chronic there is but little pain about the genital organs, and the discharge is abundant and lasting, or only occurs for a few days after the menses; it is accompanied in such cases by pain of

the loins and thighs, by languor, by irregularities in digestion, and by a gnawing sensation in the stomach.

726. It may be confounded with chronic matritis, or cancer of the uterus.

727. *Anatomical Characters.*—Redness, more or less evident, of the lining membrane, which in some instances appears rather thicker than in its healthy condition. In the chronic stage the membrane presents no marks of redness, but is occasionally covered with fungous vegetations.

INFLAMMATION OF THE TESTICLE.

728. *Symptoms.*—This affection often arises from the suppression of acute or chronic gonorrhœa. It begins with a dull pain in the epididymis, which soon increases, extends to the testicle, and causes a swelling and enlargement of it. The pain becomes very acute, extends up to the loins, following the course of the spermatic cord, which is often sensible to the touch, and swollen; the scrotum frequently becomes inflamed, and increases the size of the tumor.

729. *The diseases with which it may be confounded* are, hydrocele and sarcocele.

730. *Anatomical Characters.*—The testicle and particularly the epididymis, is swelled, red, and increased in density; in some cases these parts have passed into the state of suppuration.

DISEASES

OF THE

CELLULAR TISSUE.

PHLEGMON.

731. *Symptoms.*—A round prominent tumour, with violent pulsating pain, and great heat, intensely red in the centre, and gradually diminishing towards its base. Pain and swelling usually precede the redness; it attacks the parts of the body which contain much cellular membrane; generally terminates by supparation, and the formation of an abscess. When it occurs in the groin, it is called a *bubo*; in the region of the parotid gland, *cynanche parotidæa*, or *mumps*; and *whitlow*, when situated in the subcutaneous cellular tissue of the fingers, or the tendinous sheaths which surround them.

732. Phlegmon may be confounded with anthrax, furunculus, carbuncle, or erysipelas.

733. *Anatomical Characters.*—In the first stage, the cellular substance is red, injected with blood, and very easily torn; in a short time, when the formation of pus is commencing, we find a gelatinous fluid issues on pressing the parts, but is soon changed into real purulent matter; this, at first, is found in numerous small collections, but finally one sac is formed; the parts around are injected with blood; the internal surface of

the abscess has the appearance of a mucous membrane: when the inflammation becomes chronic, it changes colour and turns greyish.

FURUNCULUS, OR BOIL.

734. *Symptoms.*—A conical, circumscribed, hard, and very painful tumor, of a fiery red colour, and very hot, terminating in suppuration; small pieces of mortified cellular substance generally come away with the purulent matter. This affection consists of an inflammation of the cellular substance, which fills the conical papillæ of the dermis, generally observed at the verge of the anus, on the buttocks, the scrotum, and internal parts of the thighs. Their volume varies from the head of a pin to the size of a cherry, and are observed to appear in great numbers successively.

735. It may be confounded with anthrax, carbuncle, erysipelas, or phlegmon.

ANTHRAX (BENIGN).

736. *Symptoms.*—An inflammatory, circumscribed, very hard and painful tumor, of a violet red colour, exceedingly hot, especially at the top of the tumor; in this is found a thick, flocculent, and bloody matter, very fœtid; even after the suppuration takes place, it still spreads; many irregular openings are formed, at the bottom of which the cellular substance is seen greyish, and sloughing in layers; attacks the neck, back, shoulders, and occasionally the parietes of the thorax and abdomen. It sometimes is several inches in circumference.

737. It may be confounded with furunculus and carbuncle.

738. *Anatomical Characters.*—In the first stage they are the same as described in phlegmon; in the more advanced stages the cuticle mortifies, and forms a blackish crust; it is swollen and infiltrated with blood

and serum. Pus may be found in the cells of the cellular tissue, or collected into an abscess.

MALIGNANT PUSTULE.

739. *Symptoms.*—A small spot appears on the skin without any precursory symptoms; this is followed by a small vesicle, which produces most violent itching; it soon breaks, and a serous, very irritating, yellowish fluid flows from it; in its centre a dry livid spot may be observed. In a very short time a dreadful burning heat comes on; new vesicles are formed round the gangrenous spot, with an œdematous swelling of the skin, which is at first very pale, and glossy, then erysipelatous; the tumor extends, and all the symptoms increase; and constitutional phenomena commence, of a nervous or low typhoid type, in their most aggravated form. In its commencement this disease is purely local, and easily cured by surgical means. It frequently proceeds from the contact of the remains of animals which have died of the carbuncle. It is always sporadic.

740. It may be confounded with anthrax, carbuncle, or erysipelas.

741. *Anatomical Characters.*—The same as erysipelas, with gangrene of the skin and cellular membrane.

CARBUNCLE, OR MALIGNANT ANTHRAX.

742. *Symptoms.*—A very hard and painful low tumor, of a fiery red colour in its circumference, but livid and black in its centre; surrounded very often by small tumors, which soon become black, or vesicles containing an irritating serosity. Always accompanied by constitutional symptoms, and generally preceded by them. It is one of the worst symptoms in pestilential diseases. Very often epidemic, especially amongst quadrupeds, and may be communicated from them to man by the contact of their remains, or the use of the flesh. It may arise spontaneously; when left to itself, it is speedily and invariably fatal.

743. It may be confounded with malignant pustule, or anthrax.

744. *Anatomical Characters.*—Those of inflammation and gangrene of the skin and cellular membrane.

ŒDEMA.

745. *Symptoms*—A uniform, indolent, and inelastic swelling of the skin; which is pale, milky-white, and glossy; retaining the impression of the finger for some time, but indicating no increase of temperature. In some cases it is confined to the lower extremities, in others it is general, and is then called anasarca.

746. It may be confounded with emphysema, phlegmon, and erysipelas.

747. *Anatomical Characters.*—The cells of the subcutaneous and intermuscular cellular tissue distended with a serous fluid.

SUBCUTANEOUS EMPHYSEMA.

748. *Symptoms.*—An indolent, colourless, shining, and elastic swelling, which does not retain the impression of the finger; but when pressed emits a particular crepitating noise, which is quite characteristic.

749. It may be mistaken for œdema.

750. *Anatomical Characters.*—The swelling is produced by gaseous fluids passing into the cells of the cellular membrane.

HARDENING OF THE CELLULAR TISSUE.

751. *Symptoms.*—Great hardening of a portion, or the whole of the cellular membrane; very firm, and not yielding to pressure; commencing generally in the hands and feet; extending along the extremities to the abdomen and face, and inducing a coldness in the integuments. It attacks infants newly born.

752. *Anatomical Characters.*—The cellular tissue filled with an albuminous yellowish liquid, occasionally very thick and purulent.

INFLAMMATIONS

OF

THE MEMBRANOUS TEXTURES.

OPHTHALMIA.

753. *Symptoms.*—This affection commences by a sense of weight and constriction in the eye; it then becomes difficult and painful to move it; violent and burning heat, increased by the action of light, with a disagreeable itchiness; the conjunctiva reddens, either generally or partially, with some swelling round the cornea; the tears flow incessantly, become irritating, and excoriate the cheeks; matter, at first limpid, afterwards thick and white, is discharged; vision becomes confused; violent headache generally complained of. When it passes into the chronic state, the violent pains cease; the edges of the eyelids swell, turn red, and become painful; the flow of tears continues, and vision is weakened, which obliges the sufferer to desist from using these organs too long at one time.

754. *Anatomical Characters.*—Redness, swelling, and roughness of the conjunctiva.

OTITIS, OR INFLAMMATION OF THE EAR.

755. *Symptoms.*—Violent lancinating pain, extending from the auditory canal to the throat, preventing free

deglutition, increased by the head being moved, by coughing, mastication, &c.; continual humming or buzzing sound; matter at first thin, afterwards thick, of a yellowish green colour, very fœtid, is discharged; this sometimes contains small pieces of bone; violent headache, particularly severe when the internal ear is affected, when frequently a caries of the mastoid cells is induced; in this case the matter may be discharged by the Eustachian tube into the pharynx, either gradually or all at once.

756. The diagnosis between external and internal otitis may be made by attention to the following symptoms. In the external the pain is not so deeply seated, matter is formed very soon; a few hours, or at most two days, are sufficient for its formation, and it is, at first, of a serous nature. In the internal affection the matter does not appear before the eighth day, and it is discharged suddenly, of a purulent quality, mixed with blood; it may flow externally by the rupture of the membrana tympani.

757. The acute form may be mistaken for neuralgia, and the chronic for some affection of the cerebellum.

CORYZA.

758. *Symptoms.*—The nares obstructed, dry and itching, disagreeable heaviness in the frontal sinuses, dull headache, frequent sneezing, loss of smell, *lachrymation*, change of the voice, secretion of mucus, at first suppressed, but becomes very abundant, serous, and irritating, which causes an excoriation round the nares; it is afterwards thick, yellowish, or green, and finally returns to its natural quality and quantity. When it runs into a very chronic state, there is sometimes a discharge of purulent fœtid matter, consequent on the existence of ulcerations.

759. When this affection seizes infants at the breast, it prevents them from sucking, as the nasal respiration is impeded. The disease may be easily detected by examining the parts.

760. *Anatomical Characters.*—Redness and injection of the mucous membrane, which sometimes is thickened and ulcerated, &c.

GONORRHŒA.

761. *Symptoms.*—A violent itching at the orifice of the urethra, in the glans penis, which is slightly swollen and red, the itching and pain much increased after the last drops of urine; a discharge of matter, which is at first limpid and colourless, then gets thick, and of a green yellow tint. The making water gives great pain, and the calls to perform this function become more frequent and urgent as the disease advances. When the inflammation extends to the whole course of the urethra, this canal hardens and is very painful; the passage of the urine is effected with much difficulty, and very often complete retention takes place; the erections are frequent, particularly in the night, and exceedingly painful. We have no positive sign to distinguish the syphilitic gonorrhœa from other similar affections.

762. *Anatomical Characters.*—The mucous membrane red, thickened, and covered with the secreted matter, especially towards the fossa navicularis; ulcerations rarely met with. When the disease has lasted for a considerable time, hardened bands and irregular cicatrices are sometimes seen. Partial thickening of the lining membrane, causing strictures, is often found.

TETANUS.

763. *Symptoms.*—Violent, involuntary, and permanent contraction of the muscles of the whole body, or of some part of it, unaccompanied by disturbance of the mental functions, generally induced by lacerated wounds. In many instances we observe convulsive twitchings of the muscles, subsultus tendinum, acute pain, slowness of the pulse, and more or less hurried respiration. Sometimes the spasms affect the elevator muscles of the lower jaw, causing the locked jaw; in other cases it is the extensor muscles of the trunk, and

less frequently the flexors, that are attacked; occasionally only one side is affected; hence the body may be bent backwards, forwards, or to one side.

764. Tetanus may be mistaken for some disease of the brain and its membranes, and still more probably, those of the spinal marrow.

765. *Anatomical Characters* not known.

RHEUMATISM.

766. *Symptoms.*—Pain more or less acute, producing a gnawing sensation, increased by the action of the affected muscles; accompanied, particularly in acute cases, with swelling, and slight redness of the integuments, generally brought on by cold and moisture. It is liable to sudden metastasis to the muscles of a different region, or to the joints; when very severe and painful, it causes fever and various constitutional symptoms. The muscles most generally attacked are those on the back of the neck, the parietes of the thorax, and the lumbar region, to which respectively are applied the terms torticoli, pleurodynia, lumbago. When it comes on gradually, or when it becomes chronic, no swelling is observed: the pains are felt only at irregular intervals; sometimes, however, though rarely, they are continued, but in almost every instance they are increased by changes in the atmosphere, or by cold. This affection is generally very tedious, lasting for many weeks, and in some instances for years; and after it has ceased, is very liable to return.

767 *The diseases with which it may be confounded* are, the neuralgic affections.

768. *Anatomical Characters.*—When acute rheumatism is seated in muscular parts, if the inflammation has been very intense, pus is sometimes found infiltrated into the part affected, or even collected so as to form an abscess. The substance of the muscles is softened, of a reddish brown colour, easily torn, and contains a bloody serum. When the disease is chronic, no very evident alteration can be perceived in the state of the parts.

ARTICULAR RHEUMATISM.

769. *Symptoms.*—Acute lancinating pain of one or more of the joints, increased by motion or the slightest pressure, and accompanied by a greater or less degree of swelling of the affected part, and sometimes inflammation of the skin over it, with perceptible fluctuation. It most commonly attacks the large joints, as the knee, the wrist, the elbow. This inflammation readily changes from one part to another, generally causes fever, and is of very tedious duration.

770. *Anatomical Characters.*—The articulations are filled with purulent matter of various consistence, or with a bloody serum; the synovial membrane is often found injected, swollen, and in some cases altogether destroyed. The articular cartilages may be enlarged, thickened, diminished, or may have partly disappeared. Pus is sometimes found effused round the joint, or into the sheaths of the tendons.

GOUT.

771. *Symptoms.*—Inflammation attacking the small joints, but more especially that of the great toe, and the phalanges; it is generally admitted to be hereditary, sometimes accidental, as acute articular rheumatism is; it usually continues a great part of the patient's life. It rarely occurs before the age of thirty years, and chiefly attacks those who live luxuriously, being often connected with intestinal irritation; recurs in regular or irregular paroxysms, in which a more or less violent pain attacks the great toe, the ankle, or the heel; lasts for some time, and goes off, the affected part remaining for a little red and swollen. Concretions of urate of soda, or lime, are often formed on the joints after these paroxysms. In cases of long standing, or in the erratic species, the diagnosis is often very difficult.

772. *Anatomical Characters.*—Calcareous concretions of the joint, with some appearance of inflammation.

DISEASES

OF THE

VASCULAR & NERVOUS TISSUES.

ELEPHANTIASIS.

773. *Symptoms.*—Hard and permanent swelling, at first confined to the lymphatics of the diseased part, commencing with a fixed pain in a cluster of glands, or in the course of the lymphatic vessels; redness and irregular swelling, with difficulty of motion. When the disease has lasted for a few days, the swelling disappears, and returns again and again; the part becomes harder and harder, at the same time small irregular tubercles are formed: the feet, the legs, the hands, and the face (the parts most commonly affected in this manner) lose all shape, and are covered with thick crusts, or small ulcerations, which discharge sanious matter.

774. *Anatomical Characters.*—The lymphatic vessels and glands swollen, discoloured, and softened; the coats of the former easily torn, if we attempt to inject them; the cellular tissue connecting these parts undergoes the same change, and appears as if scirrhous.

PHLEBITIS, OR INFLAMMATION OF VEINS.

775. *Symptoms.*—Pain and swelling in the course of the affected vein, extending from the point where it

commenced towards the heart: the cellular substance near the part, and sometimes that of the whole limb, swollen; in the course of the vein a kind of cord is felt rolling under the finger. This affection is generally produced by bleeding.

776. *Anatomical Characters.*—On examination the coats of the vein are found thickened, red, and easily torn, with pus effused into its cavity. The inflammation generally extends more towards the heart than in the opposite direction.

NEURALGIA.

777. *Symptoms.*—Fixed pain in the trunk, or branch of a nerve extending along its course, speedily changing from one part to another, sometimes affecting all together, or confined to one or two branches. The pain is very various; some complain of an icy coldness, or a burning heat; some of a disagreeable numbness (the sense of touch being impaired), or a kind of electric shock; in others we have lacerating or quick lancinating pains, transitory prickings, or permanent pulsations. This pain is very irregular, its paroxysms coming on generally without any evident cause. Pressure of the nerve or its filaments in the most violent paroxysms rather lessens the pain, or if it should cause any, none of the characteristic marks of neuralgia are observed; it determines rather a slight numbness of the part which is pressed, but never a lancinating pain in the course of the nerve. No alteration can be observed in the integuments of the affected part; heat in some instances lessens the pain, in others increases it; in the latter case cold affords relief. Neuralgia may change instantaneously from one nerve to another; it may attack any nerve in the body; but as its symptoms are always the same, we shall only speak of its chief varieties.

778. Neuralgia may be confounded with inflammation of the nerve, or certain rheumatic affections.

779. *Neuralgia of the facial nerves.*—Pain in some facial branch of the portio dura of the seventh pair, or in some of the numerous divisions of the fifth. This species is generally intermittent, and accompanied by the most violent and variable pains, and all the characteristic phenomena of which we have given an account. The paroxysms are commonly very short, but recur very frequently.

780. *Neuralgia (Ileo-scrotal).*—Of very rare occurrence, situated in the second branch of the first pair of lumbar nerves. The pain commences at the crest of the ilium, extends to the spermatic cord, to the scrotum, attended by contraction of this covering and retraction of the testicles.

781. *Sciatica.*—Pain extending from the ischiatic notch along the posterior part of the thigh to the ham, then affecting the knee, from that to the leg, on its fibular side, and terminating in the calf.

782. *Neuralgia Cruralis.*—Pain following the course of the crural nerve, from Poupart's ligament on the inside of the leg to the dorsum of the foot.

783. *Neuralgia (cubito-digital).*—Pain from the internal condyle of the humerus to the dorsal or palmar regions of the fore-arm.

784. *Anatomical Characters.*—No alteration can be perceived in the affected parts.

INFLAMMATION OF THE NERVES.

785. *Symptoms.*—A fixed, lacerating, numbing, or lancinating pain in the trunk, or branch of a nerve, increased very much by pressure, but unaccompanied by the various characteristics of neuralgia; it is generally continued, or its remissions are not well marked; in some instances a slight swelling of the nerve may be observed.

786. *The diseases with which it may be confounded* are, neuralgia, and certain rheumatic affections.

787. Its morbid characters are—redness, more or less, of the structure of the nerve, with injection of its vessels, or those of the surrounding cellular substance; partial ecchymosis; sero-sanguineous or sero-purulent effusion in the nervous filaments; sometimes thick pus is found in the nerve. A few cases are related in which the nerves were found gangrenous in many points; even small tumours, like tubercles, are said to have formed in the nervous tissue, or between the filaments of the nerve.

CONSTITUTIONAL DISEASES.

SCURVY.

788. *Symptoms.*—Lassitude, with a sense of weight in the muscles of the lower extremities; indolent and inelastic swelling of the legs, which are covered with blotches of greater or less size, not elevated, red, blue, violet, or yellow, very similar to those ecchymoses arising from contusions, changing colour as the former, becoming brown, and gradually disappearing; pain, swelling, and bleeding of the gums; fœtid smell from the mouth, and the teeth get loose, and fall out, and hæmorrhage occurs from the various mucous membranes.

789. *Anatomical Characters.*—The blood is generally found fluid, the muscles flaccid, the bones softened, yellow, and uneven. The viscera present various appearances; they are generally softened, pale, and gorged with watery blood. The brain somewhat softened.

SYPHILIS.

790. *Symptoms.*—These differ much in the various tissues which may be affected, but in all cases arising from a syphilitic taint, and attended with ulceration and discharge of matter, capable of reproducing the same disease by inoculation. When the mucous membrane is affected, we find gonorrhœa, ophthalmia, or ulcers. These ulcers commence in a pimple, and afterwards have the following characters:—a greyish base, the edges hard, thick, red, and conical; they generally

occur on the glands, on the internal surface of the prepuce, in the vulva, the mouth, in the throat, or about the anus. When the skin is affected, we observe patches of a copper or reddish brown colour; dry furfuraceous crusts at the roots of the hairs; greyish ulcers, which proceed from prominent pimples, appearing like boils; round transparent pustules covered by crusts; dry or suppurating fissures; and finally, we may have the epidermis very rough or uneven.

When syphilis attacks the glands, the inflammation has a great tendency to run to suppuration or induration; the inguinal glands are those most exposed. The periosteum and bones, especially of the cranium and face, the sternum and tibia, are very frequently affected; the parts swell, and a hard, more or less prominent tumour, is observed; the pain which is produced is much more violent during the night. A deep caries is often the consequence.

791. *Anatomical Characters.*—Just described above.

SCROFULA.

792. *Symptoms.*—Indolent swelling of the glands in various parts of the body, but occurring most commonly in the neck and abdomen of children. No change is observed in the skin at the commencement, but after some time it becomes red, gets thinner, and finally ulcerates; this is attended with very little pain. Scrofula often induces swelling and caries of the long bones; various affections of the joints, especially of the knee, hip, foot, and ankle. The affected glands remain for some time without change; at length they soften, and ulcerations take place, discharging a serous fluid, sometimes mixed with albuminous flocculent matter. The cicatrices of these ulcers are pale, irregular, and wrinkled. When scrofula attacks the lungs it causes phthisis. Persons whose lymphatic system is much developed seem particularly subject to this disease. It is remarked to be endemic in moist and cold valleys, where the rays of the sun cannot penetrate.

793. *Anatomical Characters.*—On dissection, the cervical, maxillary, or mesenteric glands, are found variously affected; those of the axilla and groin are not so commonly diseased. Tubercles are often discovered in the lungs. In some instances we find swelling and softening, or destruction of the articular surfaces, and caries of the ends of the bones.

[Scrofula, like gout or phthisis, is generally admitted to be hereditary, and persons of a strumous, gouty, or phthisical habit, are said to inherit these peculiar conformations of body from the same source whence they derive their property or possessions. Yet these diseases, in a strict acceptation of the term, cannot be said to be transmitted from parents to their offspring; for some individuals of a family pass through life without ever having exhibited any symptom of them; and many well-authenticated cases may be cited in which they lie dormant in one generation, and reappear in the succeeding. It is not, then, the actual disease which is transmitted, nor is it any thing in the nature of a germ which is implanted in the system of the offspring, and which shoots forth and maturates at some particular period of its life. A disease cannot, in strictness or propriety, be said to be hereditary in a child, unless traces of it appear at the time of its birth. If so, the class of hereditary diseases must be considerably diminished; it must be restricted to those which are congenital. This appears to have been the view of the subject entertained by our great authority, Mr. Hunter, when he laid down his doctrine of predisposition to disease; for it should be recollected that he drew a marked line of distinction between *a hereditary disease*, and *a predisposition to disease*, derived from the parent. In one case, a disease (*e. g.* syphilis, with which the parent may have been affected) is manifest at birth; in the other, a particular conformation of the system exists, which will render the offspring liable to a certain disease, if it be exposed to certain agencies or exciting causes, but not otherwise. Individuals as well as families are distinguished by some

peculiarities of constitution, called temperaments and idiosyncrasies. These seem evidently to be connected with, and to depend on the degree in which certain organs, or systems of organs, are developed; and as these peculiarities are constantly observed to run in families, they may fairly be considered to be hereditary; for as resemblances in outward form and face are transmitted from parent to offspring, so also may those conformations of internal parts which constitute the individual and family peculiarities here referred to. Now, such organs or parts as are most energetic in their actions, are generally observed to be the most susceptible of the influence of stimuli, or of any disturbing agencies to which the system may be exposed; and the greater the excitability of a part, and the longer its excitement is kept up, the greater must be the tendency of that part to take on diseased action. The sanguineous system is observed to predominate in some individuals and families; the nervous or lymphatic in others. In some persons the articulations of the limbs are very liable to become inflamed, either by the direct application of stimuli, or by taking on a sympathetic action with an affection of some other organ. Such a peculiarity as this, joined with a sanguineous constitution, renders the system prone to take on that train of morbid actions to which the term gout is applied. Predisposition to disease, then, merely implies (if my understanding of the doctrine be correct), an aptitude or tendency in the system, to take on a morbid action—a tendency which it is well known has in many instances been averted or corrected by various means. "The children of the rich," says John Brown, "inherit the gout, together with the fortune of their fathers; strip them of their property, you free them from their gout." The strumous diathesis, as well as the gouty, may be excited into action, or may occasionally be prevented from shewing itself. If an individual of this habit suckle her own child, its predispositon will almost certainly be called into action, and some form of the disease will manifest

itself at an early period; but if another of her children be confided to a nurse of a different constitution, it may escape altogether.

May scrofula, like gout, be acquired? Many facts may be cited to prove that scrofula will arise or be developed in children, even of good constitution, if they be exposed to the influence of impure air and bad diet, particularly in situations from which the direct rays of the sun are excluded.

I recollect to have heard M. Andral, in his Pathological Lectures, say, that the majority of the strumous cases, in the "Hôpital des Enfans Malades," in Paris, were brought from a low and confined part of the city, in which the streets are so narrow, and the houses so high, as to exclude the direct light of the sun; and the air is rendered heavy and humid by a constant evaporation from open sewers, which run through the streets: which circumstances, in his opinion, and, I believe, in that of the best informed persons, are highly favourable to the development of scrofula. This opinion derives additional support from the fact that tubercle may be produced even in the lower animals, if exposed to similar agencies; for such is the analogy between scrofula and tubercle, that we are warranted in applying to the one an inference drawn from the other. If young and healthy cows be brought from the country into the city, and confined in stalls attached to dairies, they at first become fat and sleek, but after some time several of them are observed to grow thin, become unhealthy, and if not speedily removed, fall into a state of complete marasmus. After death tubercles are found on several of the textures of the body.]

DISEASES OF THE SKIN.

794. [The space devoted to the consideration of skin diseases in the original work was so limited, that I was induced, in the former translations, to take advantage of the work of Willan and Bateman, and adopt their classification. The more recent investigations of M. Rayer, however, lead me to think that some further improvement may be effected; and I have therefore adopted the following arrangement, founded upon the forms and pathological conditions which these diseases present at their first invasion.]

I.

INFLAMMATIONS OF THE SKIN.

ORDER I.

Exanthemata.

Rubeola.
Roseola.
Scarlatina.
Urticaria.
Erythema.
Erysipelas.

ORDER II.

Bullæ.

Pemphigus.
Rupia.

ORDER III.

Vesiculæ.

Herpes.
Psora.
Eczema.
Miliaria.
Varicella.
Vaccinia.

ORDER IV.

Pustulæ.

Variola.
Ecthyma.
Cuperosa.
Mentagra.
Impetigo.
Tinea.

ORDER V.

Papulæ.

Strophulus.
Lichen.
Prurigo.

ORDER VI.

Tuberculæ.
- Lupus.
- Cancer.
- Elephantiasis.
- Frambœsia.

ORDER VII.

Squamæ.
- Lepra.
- Psoriasis.
- Pityriasis.

ORDER VIII.

Linearæ.
- Fissures, &c.

II.

INFLAMMATIONS OF THE SKIN CONSEQUENT ON THE ABSORPTION OF A SPECIFIC POISON.

Syphiloid eruptions.

III.

CONGESTIONS AND HÆMORRHAGES OF THE SKIN.

- Purpura.
- Ecchymosis.
- Petechiæ.

IV.

ALTERATIONS OR DEFECTS IN THE COLOUR, CONFORMATION, OR TEXTURE OF THE SKIN.

- Ephelis.
- Lentigo.
- Nævus.
- Molluscum.
- Verruca.
- Ichthyosis.
- Clavus.

V.

DISEASES OF APPENDAGES OF THE SKIN.

- Onychia.
- Plica
- Canities.
- Alopecia.

795. [In treating of diseases of the skin, it is of importance that the language employed be clear and precise, and that the different terms used in describing them

be of as fixed and definite a character as possible; hence the necessity of attending particularly to the following definitions, as laid down by Dr. Bateman:—

1. Papula (pimple): a very small acuminated elevation of the cuticle, with an inflamed base, very seldom containing a fluid or suppurating, commonly terminating in scurf.

2. Squama (scale): a lamina of morbid cuticle, hard, thickened, whitish, opaque. Scales, when they increase into irregular layers, are denominated crusts.

3. Exanthema (rash): superficial red patches, variously figured, and diffused irregularly over the body, leaving interstices of a natural colour, and terminating in cuticular exfoliations.

4. Bulla (bleb): a large portion of the cuticle detached by the interposition of a transparent watery fluid. (Probably it would be better expressed by saying that it is a small transparent tumour, formed by an effusion of serum beneath the cuticle.)

5. Pustula (pustule); an elevation of the cuticle, with an inflamed base, containing pus. (This tumour becoming dry, forms thick crusts or scabs, which cover excoriations or ulcerations more or less deep.) The following terms have been devised to express the varieties which pustules present:—

a. Phlyzacium (φλυζω, fevere et ebullire); a pustule, commonly of a large size, raised on a hard circular base, of a vivid red colour, and succeeded by a thick, hard, dark-coloured scab.—*b. Psydracium* (quasi, φυκρα ὑδρακια; i.e. frigidæ guttulæ): a small pustule, often irregularly circumscribed, producing but a slight elevation of the cuticle, and terminating in a laminated scab. Several of these usually appear together, and becoming confluent, form an irregular incrustation.—*c. Achor*: a small acuminated pustule, containing a straw-coloured matter, having somewhat the consistence of strained honey, and succeeded by a thin brown or yellowish scab.—*d. Favus* is larger than the achor, flatter, and not acuminated, and contains a

more viscid matter. Its base, which is often irregular, is slightly inflamed: it is succeeded by a yellow, semi-transparent, and cellular scab, somewhat like a honey-comb, whence it takes its name.

6. Vesicula (vesicle): a small orbicular elevation of the cuticle, containing lymph, which is sometimes clear and colourless, but often opaque and whitish, or pearl-coloured. It is followed by a scurf, or by a laminated scab.

7. Tuberculum (tubercle): a small, hard, superficial tumour, circumscribed and permanent, or suppurating partially.

8. Macula (spot): a permanent discoloration of some portion of the skin, often with a change of its texture.

9. Wheal: a rounded or longitudinal elevation of the cuticle, with a white summit, but not permanent; not containing a fluid, or tending to suppuration.

10. Furfur (scurf): small exfoliations of the cuticle, occurring after slight inflammations of the skin, a new cuticle being formed underneath during the exfoliation.

11. Scab: a hard substance covering superficial ulcerations, and formed by a concretion of the fluid discharged from them.

12. Stigma: a minute red speck in the skin, without any ulceration of the cuticle. When stigmata coalesce, and assume a dark red or livid colour, they are called *petechiæ*.

INFLAMMATIONS OF THE SKIN.

796. [All those diseases of the skin are comprehended under the head of Phlegmasiæ, which are characterized either by local or general accumulation of blood on its surface or within its texture, whether it result in resolution, desquamation, morbid secretion, ulceration, or induration. The texture universally implicated is the rete mucosum; but the dermis, its interareolary cellular tissue, the sebaceous follicles, bulbs of

the hair, and even the subcutaneous cellular tissue, may be respectively or collectively involved. To the redness is added pain, heat, and swelling, as in other inflammations, varying according to the nature and intensity of the eruption; the two former giving rise to itching, pricking, shooting, smarting, burning, erosion, tension, &c.; while the last, though evident in variola and similar diseases, is barely apparent in others—as roseola. The functions of the skin, as perspiration, the sense of touch, and the secretion of the sebaceous follicles, may be increased or impaired; and the appendages of the skin undergo various changes. In some the eruptions are confined to particular parts, while in others they appear indifferently in all. *Acute* diseases of the skin are for the most part preceded or accompanied by disturbance of the internal organs, of which they may be considered the attendants. On the contrary, the *chronic* are commonly quite independent of such derangements. Both, however, sometimes coincide with phlegmasia of the mucous membranes; and there are fair grounds for believing that the mucous are affected with the same diseases as the cutaneous structures,—only that the difference of texture modifies their development, or prevents their detection.]

797. [To arrive at a correct diagnosis of an eruptive disease, it is essential to become well acquainted with the characters of the orders; but it must not be expected that each genus, or every order, is to be distinguished by invariable characters; on the contrary, they are often so insensibly blended together, as to defy the restraint of classification: many of them, therefore, require to be viewed as stages of the same disease, varying only in intensity. Thus, by the friction of papulæ, or any aggravation of the causes which have produced them, they may be advanced to the order of vesicles; while a still higher degree of inflammatory action may produce suppuration, thereby constituting them into pustules. Hence it is that we find varicella among vesiculæ, in the classification of Willan; while

Rayer puts it with pustulæ. Again, bullæ and vesicles differ in little else than size; and thus it is that rupia has a place among the bullæ of one author, and with the vesiculæ of another, when in fact it is little else than ecthyma, in a less aggravated form. Eczema runs insensibly into impetigo, which only differs from it in point of maturity; and the same remarks are not less applicable to several other genera. We may therefore expect to find this diversity of character not only in different subjects, but even in the same person. A proper attention to these remarks may tend to remove many difficulties which beset the determination of cutaneous affections.]

Order I.—Exanthemata.

798. [The term *Exanthema* (efflorescence), though it originally included all eruptions, is now limited to those which exhibit, even in their highest degree of development, a mere blush of increased vascularity, or red tint, confined to one region, or diffused over the entire surface of the body, accompanied by fever, obeying regular periods of efflorescence and decline, and terminating, for the most part, in resolution or desquamation. Exanthemata are sometimes complicated with papulæ, vesiculæ, and bullæ; severe erysipelas, frequently terminating in bullous elevations of the cuticle. The genera of this order are rubeola, roseola, scarlatina, urticaria, erythema, and erysipelas.].

Rubeola, morbilli, or measles.

799. [Rubeola is a contagious disease, affecting at the same time the skin and gastro-pulmonary mucous membrane. It is usually ushered in by fever and catarrhal symptoms, as coryza, flow of tears, and cough. The rash in measles appears usually at the fourth day of the febrile disorder, though it may be advanced to the second, or delayed to the twentieth; after a continuance of four days, it declines with the fever. It sets in from ten to fourteen days after the reception of

the contagion. In its ordinary form—*a. Rubeola vulgaris*—it commences with the usual symptoms of fever, and therefore cannot at first be easily distinguished from common fever. A knowledge of the prevailing epidemic, and an attention to attendant catarrhal symptoms, will contribute much to clear up the diagnosis. On the third, or more usually on the fourth day of the febrile attack, the conjunctiva is observed to be suffused; and there is an effusion from the eyes and nostrils, not unfrequently attended by sneezing; and the eyelids are somewhat swollen. Cough and hoarseness are also complained of, and sometimes there is a slight delirium during the night. On the fourth day the rash appears over the forehead and chin, then over the rest of the face; on the following morning it appears visible on the neck and breast, descending thence, towards evening, over the trunk, and lastly over the extremities. During the fifth day the rash is more vivid on the face, but on the sixth it declines; whilst on the body it is highly red. On the seventh it declines in the latter situation also, the spots becoming pale in the same order as they appeared; the patches on the hands, which do not usually present themselves till the sixth or seventh day, decline on the eighth. On the ninth little remains but a slight discoloration of the skin, which entirely disappears on the tenth; not unfrequently, after the redness has disappeared, the cuticle becomes detached in small furfuraceous scales. The rash first comes out in the form of minute red and circular dots, which, as they increase in number, coalesce, and form patches, of an irregular figure, but approaching nearly to arches or semi-circles. This is considered diagnostic of the complaint. Measles, in its ordinary form and progress, requires little medical treatment; but when the accompanying catarrhal symptoms are severe, it requires care and vigilance. As the eruption declines, the catarrh in some cases becomes rather urgent, and does not yield to demulcents or any other of the mild means usually resorted to. This con-

dition may end in pneumonia, which, if not subdued, may produce phthisis; or by an extension of the inflammation to the pleura, such an effusion of serum, with of course some coagulable lymph, may take place, as to give grounds for the statement made by some authorities, that the disease has terminated in hydrothorax. In such cases much useful information is obtained by the use of the stetboscope. Acute catarrh or bronchitis, in its mild form, determines merely a *mucous rattle*, which is audible to a greater or less extent; but in the severer forms, the *sibilous rattle* is heard, and the urgency of the case will obviously be determined by the extent in which it is audible; it must be considerable if both lungs be affected, particularly if inflammation has extended over much of the lining membrane of each. The *crepitant rattle* satisfactorily marks the supervention of pneumonia, its extent indicating the quantity of danger; and finally, if the pleura becomes inflamed, and a serous effusion takes place into the cavity of that membrane on one side, the respiratory murmur becomes dull or suppressed; *ægophony* is then heard in some part of the affected side; and should the corresponding lung be compressed to any considerable extent, the respiration becomes puerile on the other. Now in such a case the patient has but one lung to perform the respiratory function, and in that, from the unnatural circumstances in which it is placed, inflammation may be induced by very slight causes. Here, again, auscultation enables us to estimate the quantity and urgency of the danger, and points to the only expedient that remains for saving the patient's life. The compressed lung must be relieved from the compressing cause—viz. the effused fluid—by paracentesis, and then the inflammation in the other lung will speedily subside, the congestion in it being relieved as soon as the circulation is equalized in both. The success of this proceeding depends on the lung being capable of distention by the admission of air after the fluid is removed, which would

not be the case if its structure were materially injured by previous inflammation. But it must be obvious that a hepatized lung is incapable of compression; so that, at least in recent cases, if we have sufficient evidence of the existence of a quantity of fluid in the pleura, we may remove it with a fair anticipation of success. It may be said that the coagulable lymph, effused together with the serous fluid, may have become organized, and if applied extensively over the lung, that it will prevent its distention. We know, however, that if the quantity of serum be considerable, the lymph will remain for weeks in a semi-fluid state, without acquiring any degree of consistence or firmness, and can therefore afford no resistance to oppose the distention of the lung. I make these remarks with a view to point out some of the many practical applications that may be made of auscultation as a means of diagnosis, and as a reply to those who still deny its utility. The texture of the skin in some degree determines the time at which the rash makes its appearance: if the rash be thin and delicate, it may present itself on the third day; while it may be deferred to the fifth when it is brown and dense. Cold, or aggravation of the internal derangements, may produce a recession of the eruption, accompanied by diarrhœa, abdominal pains, impeded respiration, delirium, &c., which succumb on its reappearance. On the disappearance of the disease, the irritable skin is liable to particular eruptions of the nature of ecthyma. Though measles is not limited by age in its attacks, it is generally confined to children, and commonly prevails as an epidemic towards the end of winter and the beginning of spring, seldom appearing oftener than once, though instances of recurrence are not rare.

Besides *Rubeola vulgaris*, there are two other species noticed by Willan and other writers—*b. Rubeola sine catarrho*, in which the course and appearance of the eruption are the same as in the ordinary form, but is not accompanied by febrile or catarrhal symptoms.

The system is still left suseeptible of the true or febrile measles. Cases of this sort have been observed only during the prevalence of an epidemic rubeola, and may be regarded as sporadic.—*c. Rubeola nigricans:* this term was applied by Willan to some cases in which the rash becomes suddenly livid, with a mixture of yellow, about the seventh or eight day, accompanied with languor and quickness of pulse. It occurs chiefly in debilitated habits. Such a circumstance may be noted whilst detailing the history of a disease, but cannot be considered a sufficient ground for establishing a species or even a variety. In cases of measles which have occasioned death, the rete mucosum and gastro-intestinal mucous membrane have been found highly injected.]

ROSEOLA.

800. [This is a rose-coloured efflorescence, for the most part presenting itself in circular or oval patches, without papulæ or wheals, and is merely the attendant of febrile affections, intermittents, and gastro-intestinal derangements, of which, however, it cannot with propriety be considered merely as a symptom. It usually attacks children, and principally deserves notice by its being sometimes confounded with other exanthemata, especially rubeola, scarlatina, erythema, and urticaria. From rubeola it is distinguished by the spots being larger, more irregular and varied in their form, in being non-contagious, and unaccompanied by catarrhal symptoms; while the eruption rarely continues beyond the fourth or fifth day. The tint of scarlatina is brighter and more permanent; on pressing it with the finger, the eruption returns gradually from the circumference to the centre; while in roseola it recovers itself from a number of points, and is never followed by desquamation. Erythema is of a deeper hue, and sometimes dips into the cellular tissue, or becomes chronic; while the prominent, itching, and temporary character of urticaria, will be sufficient to mark it. It sometimes

occurs in children on the ninth or tenth day after vaccination—Ros. vaccina, accompanying the redness which surrounds the vesicle, and extending to other parts of the body. It is sometimes the forerunner of small-pox—Ros. variolosa, appearing two or three days before the variolous pustules, which are distinguishable amidst the general redness by their elevation, hardness, and white tops. Though not confined to age it generally attacks children—R. infantilis, more particularly in warm weather—R. æstiva, R. autumnalis; sometimes it appears in rose-coloured rings inclosing small spaces of a natural colour—R. annulata; sometimes it accompanies an eruption of miliary vesicles with fever—R. miliaris.]

SCARLATINA.

801. Scarlet Fever, like small-pox, measles, and chicken-pox, affects persons but once in life: it is, like the diseases just mentioned, propagated by contagion. The milder form (*scarlatina simplex*) consists of a red rash, with some degree of fever. On the second day of a slight febrile attack, the rash begins to appear in numerous red dots over the neck and face, which increase so rapidly as to extend all over the body in twenty-four hours, so that on the third day they form a diffused continuous redness; at least on the limbs, for on the trunk it occurs usually in patches. The skin is dry, hot, and itchy, and in some places, where the inflammation is intense, a roughness is felt (*cutis anserina*) and sometimes papulæ, or even vesicles. On the fifth day the redness begins to fade, and on the seventh it disappears altogether; on the eighth and ninth, desquamation of the cuticle takes place. The efflorescence extends from the skin inwards to the mucous membrane; the papillæ of the tongue become red and enlarged; the face, too, is slightly swollen; restlessness and delirium are occasional attendants; which subside as the fever goes of.

[*Scarlatina Anginosa* commences generally with a dull

pain and sense of stiffness in the neck and throat, accompanied by a considerable degree of fever; the affection of the throat in some cases, however, does not occur until the eruption is at its height. The rash appears in the second or third day, coming out in scattered patches, particularly about the elbows; it sometimes vanishes and reappears partially. On the fourth or fifth day from the first appearance it declines, after which the cuticle exfoliates to a greater or less extent, dependent on that of the efflorescence. The heat of the skin is greater than in any other febrile complaint of our climate; the pulse ranges from 110 to 120; restlessness, languor, and oppressive breathing, are usual attendants, but the function of respiration is not generally so much affected as in rubeola. On the subsidence of the disease, great debility generally supervenes. Amongst the sequelæ to be apprehended are, anasarca of the face and limbs, and in some instances deafness. The last is a consequence of the inflammatory affection of the throat, which by extending along the Eustachian tubes seals them up, and so prevents the ingress of air into the cavity of the tympanum. The condition of the tongue deserves attention: its papillæ are red and elongated, and its borders and point also red: the tonsils are enlarged, and present on their surface some aphthous vesicles. An antiphlogistic regimen and treatment are obviously indicated.]

[*Scarlatina Maligna* commences like the preceding, but, as its name implies, exhibits rather urgent symptoms. The rash, which is usually faint and diffused in patches, assumes a dark or livid colour: it is uncertain in its duration, appears late, and sometimes disappears rather suddenly, but recurs after an interval of some days. The pulse is small and feeble, sometimes irregular, and the heat of the skin less intense than in the preceding form. The eyes are dull and suffused; the tongue loaded with a brown incrustation. Ulcerations, deep and livid, occur in the throat, and cause a marked fœtor of the breath, and an acrid discharge issuing from

the nostrils. Petechiæ and vibices sometimes appear on the skin; diarrhœa, too, is not an unfrequent occurrence, and in extreme cases hæmorrhage takes place from the mouth and fauces, as well as from the bowels. To distinguish scarlatina from measles, attention should be paid to the following facts, viz.:—Rubeola is accompanied by catarrhal symptoms; the eruption appears on the fourth day, commencing first at the upper part of the body, disposed in little crescent-shaped patches of red, not very vivid, and frequently terminating in bronchial inflammation; on the contrary, the attendant symptoms of scarlatina are those of cynanche: the rash appears on the second day all over the body, and of a very uniform and bright red, presenting the appearance of a lobster, or as if the skin had been smeared with raspberry juice; and the disease is generally followed by a disposition to anasarca.]

URTICARIA.

802. This is a non-contagious exanthematous inflammation, ordinarily called nettle-rash, from its being marked by similar elevations of cuticle and stinging to those caused by the *urtica urens* and *dioica*. It is usually symptomatic of some irritation of the primæ viæ, or teething in infants, and is very commonly induced by indulgences of the table, or by particular kinds of ingesta; as mushrooms, oatmeal, crabs, muscles, almonds, &c. It sets in with some degree of fever, and after a day or two the cuticle is observed to be raised in different parts of the skin, presenting wheals of a white colour, and often surrounded by diffuse redness: these inflamed spots are the seat of tingling, itching, and formication—*Urticaria febrilis*. The eruption is not generally permanent, but comes and goes, disappearing in one place and presenting itself in another—*U. evanida*; it may, however, remain for a time—*U. perstans*. If the wheals are numerous, and coalesce, it is called *U. conferta*, and if the inflammation be severe and obstinate, so as to extend to the subcutaneous cellular

tissue, *U. subcutanea:* when the patches become rapidly extensive and permanent, *U. tuberosa.*

ERYTHEMA.

803. [This, like roseola, is an attendant on some other disease, of which it may be considered as a symptom. It consists of a continuous redness of some part of the skin, with some constitutional disturbance. Thus it may occur on a limb in which the skin is distended by œdema or anasarca, or on the face and chest of persons subject to dyspepsia, or other derangements of the primæ viæ. Its appearance must necessarily be various in different individuals; the varieties being dependent on the age, sex, constitution, and habits of patients. Willan enumerates six varieties; Erythema fugax; lævc; marginatum; papulatum; tuberculatum; and nadosum.]

ERYSIPELAS.

804. [Is an eruption of a deep red colour, frequently attended by very severe inflammation, which, by dipping into the subcutaneous cellular tissue, produces tumefaction, effusion of serum, or even pus. By Willan it is placed with the bullæ; but inasmuch as it is essentially a rash at its onset, we have thought it right to follow Rayer, by inserting it at the end of the order exanthemata, forming the connecting link between the order and bullæ. Erysipelas is distinguished into idiopathic and symptomatic: the former term being applied to that which takes its origin in morbid action of the skin, excited by causes operating peculiarly upon itself, as heat, friction, dirt, or the irritation of plants or vermin; the latter, to that form which owes its existence to irritation of the gastro-intestinal canal, produced by acrid or unwholesome ingesta. In this case the eruption is preceded or accompanied by shivering, pain in the epigastrium, foul tongue, hard and frequent pulse, and constipation: but as it is well known that these symptoms frequently supervene on erysipelas following

local injury, we may, without impropriety, consider them as symptomatic of the external affection, or at any rate coexistent with it. It is usually considered under the separate heads of simple, phlegmonous, and œdematous erysipelas.

Simple Erysipelas.—The skin of the affected part is slightly swollen, and of a red colour, with a well defined but irregular border: the redness disappears on the slightest pressure, but instantly returns on its removal; there is acute pain, with the sensation of burning heat, but not of throbbing, as in phlegmon. These symptoms are followed by slight desquamation; in some instances small miliary vesicles appear, *E. miliaris*; sometimes there are bullæ or phlyctenæ, *E. phlyctænodes*; and the humour which these contain, by drying on the skin, form yellowish crusts. The most favourable termination is in resolution, in the event of which the epidermis falls off in scales; at other times it is erratic, leaving one place, and going to another, and sometimes it terminates in *metastasis* to some of the internal organs.

Phlegmonous Erysipelas.—In this kind the redness is very vivid, diminishing in intensity from the centre to the circumference, and not returning so quickly after pressure as in the simple form. The inflammation having extended to the cellular tissue, produces swelling, hardness, and burning pain: if it terminate in resolution, the redness and tension will decline, and the cuticle will exfoliate in furfuraceous scales. Should it proceed to suppuration, the abscess may discharge its pus either spontaneously or by incision, and cicatrize, or the inflammation may continue for eight or ten days, extending its ravages into the cellular tissue between the muscles, which is discharged in gangrenous masses, mixed with fœtid pus. The constitution, as may be expected, severely suffers from this mischief, and the pulse becomes hard and frequent, the tongue brown black, and the gums covered with sordes; inflammation of the brain, or its membranes, of the stomach and

intestines, present themselves, and the patient generally sinks under diarrhœa, with delirium and coma.

Œdematous Erysipelas.—The swelling comes on slowly, is not so hard as in the other species; rather inelastic; the skin, smooth and shining, retains the impression of the finger for some time; vesications are formed, and followed by yellowish crusts. This affection very often induces gangrene; attacks the organs of generation and the lower extremities of hydropic patients; or the face, in which case it is often attended by vomiting, rigors, and coma, and considerable danger to the patient.

Few persons, I believe, are now disposed to contend that the peculiar action which characterizes erysipelas is confined to the skin, as it evidently extends to the subjacent cellular tissue. Some facts sufficiently known would seem to show that it commences in the latter structure, and thence extends to the cutis, which furnishes an adequate explanation of the advantages derived from making free incisions through the skin, as recommended by Mr. Lawrence. By such a measure pressure is removed from a structure which is very liable to run into mortification, in consequence of the low degree of vitality and organization which it possesses. On examination after death, the redness is found to have disappeared; the skin infiltrated, and a bloody serum flows from it when cut. Its texture is changed, as it is much more easily torn than when in the natural state. In the simple erysipelas the skin is said to be altered in its superficial vascular layers only; but in the phlegmonoid its whole thickness is affected, and the veins are found diseased, their internal coat red, and occasionally they are seen filled with pus—a phenomenon never observed in the arteries of the same parts. Pus is also met (in the phlegmonous erysipelas) effused into the cellular membrane, or collected into one or more abscesses. When it terminates by gangrene, the vesicles are observed to be black and friable.

Order II.—Bullæ.

805. [This order comprises some of those affections of the skin in which the inflammatory action has produced an effusion of serous, sero-purulent, or sanguinolent fluid, elevating the cuticle so as to form bullæ or bladders; they only differ from vesicles in point of size. This will sufficiently explain the reason why the same disease may find a place in the order bullæ of one author, and in the vesiculæ of another; as, for instance, rupia, which Willan puts among the vesicles. On rupturing the bullæ, the papillæ and skin beneath will be found highly inflamed, and injected with blood. Bullæ may be produced artificially, as by vesication, friction, pressure; but any observations on these would be foreign to our purpose.

PEMPHIGUS.

806. [In this genus I have included both the pemphigus and pompholix of Willan, believing, with Rayer, that their differences are too slight to justify their separation. Pemphigus is distinguished by the inflammation of the skin terminating in the production of large transparent bullæ, and may be conveniently considered in the acute and chronic stages. Acute pemphigus presents itself in spots, first of a bright, and subsequently of an obscure red colour: these spots are circular or oval in their shape, and slightly prominent; they resemble somewhat the eruption of erysipelas, and are accompanied by pain and heat. In a short time a serous secretion is produced, which raises the cuticle, forming blebs: these vary in size from an almond to a pullet's egg. If the inflammation be very acute the fluid becomes sero-purulent, and in old people it is sometimes sanguinolent. The bullæ usually burst in about forty-eight hours, and the secreted humours become dried up into brown crusts, which falling off leave patches of an obscure red. Pemphigus may be general or partial, and the bullæ may appear simultaneously or

successively: the lower limbs, the trunk and face, are the parts most commonly affected. It is not always followed by constitutional symptoms, and is very rare.

[*Chronic Pemphigus* is a more frequent disease, sometimes lasting for several months, the bullæ disappearing and again presenting themselves successively, leaving the skin more deeply excoriated than in the acute form. It very frequently exists independently of any internal affection, but it is sometimes attended by irritations of the gastro-intestinal canal, and by languor, nausea, headache, &c. When it occurs in the mild form it is called by Bateman, pompholix benignus, and diutinus when it appears in successive eruptions on debilitated persons, accompanied by febrile attacks every night: this is the most common form. Solitarius has been applied to express the fact of the rare occurrence of a single bulla appearing at a time; but surely, to call this a distinct species is an unnecessary refinement.]

RUPIA

807. [Is an affection commonly developed on the legs and loins, and consisting of small, broad, flat bullæ, with bases more evidently inflamed than in pemphigus. The bullæ burst, and the discharge concretes into thin superficial scabs. The fluid is at first serous, then sero-purulent, purulent, or sanguinolent, generally terminating in a pustule having all the characters of ecthyma, of which it can only be considered a variety. Rupia simplex is the common form, and when the crusts are large and prominent it is called R. prominens.

Order III.—Vesiculæ.

808. [In this order of skin diseases the inflamed corpus mucosum excretes drops of serosity which, elevating the epidermis in minute portions, form vesicles having inflamed bases, and differing only in size from bullæ. These vesicles may terminate in absorption of the serous fluid and desquamation of the cuticle, or in

severer cases by the exudation of the fluid, and concretion in the form of crusts, sometimes producing excoriation and a sero-purulent discharge, and finally terminating in desquamation.

This order comprehends six genera; viz. herpes, psora, eczema, miliaria, varicella, and vacciuia.]

HERPES.

809. This appellation is here limited to a vesicular disease, which, in most of its forms, passes through a regular course of increase, maturation, and decline, and terminates in about ten, twelve, or fourteen days. The vesicles arise in distinct but irregular clusters, which commonly appear in quick succession, and they are set near together, upon an inflamed base, which extends a little way beyond the margin of each cluster. The eruption is preceded, when it is extensive, by considerable constitutional disorder, and is accompanied by a sensation of heat and tingling, sometimes by severe deep-seated pain, in the parts affected. The lymph of the vesicles, which is at first clear and colourless, becomes gradually milky and opaque, and ultimately concretes into scabs; but, in some cases, a copious discharge of it takes place, and tedious ulcerations ensue. The disorder is not contagious in any of its forms.

The ancients, although they frequently mention herpes, and give distinctive appellations to its varieties, have no where minutely described it. Hence their followers have not agreed in their acceptation of the term. It has been principally confounded with erysipelas on the one hand, and with eczema, impetigo, and other slowly spreading eruptions, on the other. But if the preceding character be well considered, the diagnosis between these affections and herpes will be sufficiently obvious. From erysipelas it may be distinguished by the numerous, small, clustering vesicles, by the natural condition of the surface in the interstices between the clusters, and by the absence of redness and tumefaction before the vesicles appear: and from the chronic eruptions

just alluded to, by the purely vesicular form of the cuticular elevations in the commencement, by the regularity of their progress, maturation, and scabbing, and by the limitation of their duration, in general, to a certain number of days.

Herpes phlyctænodes.—This species of the eruption, including the miliary variety above mentioned, is commonly preceded by a slight febrile attack for two or three days. The small transparent vesicles then appear, in irregular clusters, sometimes containing colourless, and sometimes a brownish lymph; and, for two or three days more, other clusters successively arise near the former. The eruption has no certain seat; sometimes it commences on the cheeks or forehead, and sometimes on one of the extremities; and occasionally it begins on the neck and breast, and gradually extends over the trunk to the lower extremities, new clusters successively appearing for nearly the space of a week. It is chiefly the more minute, or miliary variety, which spreads thus extensively; for those which, at their maturity, attain a considerable size and an oval form, seldom appear in more than two or three clusters together, and sometimes there is only a single cluster. The included lymph sometimes becomes milky or opaque in the course of ten or twelve hours; and about the fourth day the inflammation round the vesicles assumes a duller red hue, while the vesicles themselves break and discharge their fluid, or begin to dry and flatten, and dark or yellowish scabs concrete upon them. These fall off about the eighth or tenth day, leaving a reddened and irritable surface, which slowly regains its healthy appearance. As the successive clusters go through a similar course, the termination of the whole is not complete before the thirteenth or fourteenth day.

The disorder of the constitution is not immediately relieved by the appearance of the eruption, but ceases as the latter proceeds. The heat, itching, and tingling in the skin, which accompany the patches as they suc-

cesively arise, are sometimes productive of much restlessness and uneasiness, being aggravated especially by external heat, and by the warmth of the bed.

The predisposing and exciting causes are equally obscure. The eruption occurs in its miliary form, and spreads most extensively, (sometimes over the greater portion of the surface of the body,) in young and robust people, who generally refer its origin to cold. But it is apt to appear, in its more partial forms, in those persons who are subject to headaches, and other local pains, which are probably connected with derangements of the chylopoietic organs.

The same treatment is requisite for this as for the following species.

Herpes zoster.—This form of the eruption, which is sufficiently known to have obtained a popular appellation, the *Shingles*, is very uniform in its appearances, following a course similar to that of small-pox, and the other exanthematic fevers of the nosologists. It is usually preceded for two or three days by languor and loss of appetite, rigors, headache, sickness, and a frequent pulse, together with a scalding heat, and tingling in the skin, and shooting pains through the chest and epigastrium. Sometimes, however, the precursory febrile symptoms are slight and scarcely noticed, and the attention of the patient is first attracted by a sense of heat, itching, and tingling, in some part of the trunk, where he finds several red patches of an irregular form, at a little distance from each other, upon each of which numerous small elevations appear, clustered together. These, if examined minutely, are found to be distinctly vesicular; and, in the course of twenty-four hours, they enlarge to the size of small pearls, and are perfectly transparent, being filled with a limpid fluid. The clusters are of various diameter, from one to two, or even three inches, and are surrounded by a narrow red margin, in consequence of the extension of the inflamed base a little beyond the congregated vesicles. During three or four days, other clusters continue to arise in

succession, and with considerable regularity; these are nearly in a line with the first, extending always towards the spine at one extremity, and towards the sternum or linea alba of the abdomen at the other; most commonly round the waist, like half a sash, but sometimes, like a sword belt, across the shoulder.

While the new clusters are appearing, the vesicles of the first begin to lose their transparency, and on the fourth day acquire a milky or yellowish hue, which is soon followed by a bluish or livid colour of the bases of the vesicles, and of the contained fluid. They now become somewhat confluent, and flatten or subside, so that the outlines of many of them are nearly obliterated. About this time they are often broken, and for three or four days discharge a small quantity of a serous fluid; which at length concretes into thin dark scabs, at first lying loosely over the contained matter, but soon becoming harder, and adhering more firmly, until they fall off about the twelfth or fourteenth day. The surface of the skin is left in a red and tender state; and where the ulceration and discharge have been considerable, numerous cicatrices or pits are left.

As all the clusters go through a similar series of changes, those which appear latest arrive at their termination several days later than the first; whence the disease is sometimes protracted to twenty, or even twenty-four days, before the crusts exfoliate. In one or two instances I have seen the vesicles terminate in numerous small ulcers, or suppurating foramina, which continued to discharge for many days, and were not all healed before the end of the fourth week.

The febrile symptoms commonly subside when the eruption is completed; but sometimes they continue during the whole course of the disease, probably from the incessant irritation of the itching and smarting connected with it. In many instances the most distressing part of the complaint is an intense darting pain, not superficial, but deep-seated in the chest, which continues to the latter stages of the disease, and is not easily

allayed by anodynes; sometimes this pain precedes the eruption.

Although the shingles commonly follow the regular course of fever, eruption, maturation, and decline, within a limited period, like the eruptive fevers, or exanthemata of the nosologists, yet the disorder is not, like the latter, contagious, and may occur more than once in the same individual. The disease, on the whole, is slight; it has never, in any instance that I have witnessed, exhibited any untoward symptom, or been followed by much debility; in the majority of cases it did not confine the patient to the house.

The causes of the shingles are not always obvious. Young persons, from the age of twelve to twenty-five, are most frequently the subjects of the disease, although the aged are not altogether exempt from its attacks, and suffer severely from the pains which accompany it. It is most frequent in the summer and autumn, and seems occasionally to rise from exposure to cold after violent exercise. Sometimes it has appeared critical, when supervening to bowel complaints, or to the chronic pains of the chest remaining after acute pulmonary affections. Like erysipelas, it has been ascribed by some authors to paroxysms of anger.

It is scarcely necessary to speak of the treatment of a disorder, the course of which scarcely requires to be regulated, and cannot be shortened, by medicine. Gentle laxatives and diaphoretics, with occasional anodynes, when the severe deep-seated pains occur, and a light diet, seem to comprise every thing that is requisite in the cure. Experience altogether contradicts the cautionary precepts which the majority of writers, even down to Burserius, have enjoined, in respect to the administration of purgatives, and which are founded entirely upon the prejudices of the humoral pathology.

In general, no external application to the clustered vesicles is necessary; but when they are abraded by the friction of the clothes, a glutinous discharge takes place, which occasions the linen to adhere to the affected

parts, producing some irritation. Under these circumstances, a little simple ointment may be interposed to obviate that effect. With the view of clearing off the morbid humours, the older practitioners cut away the vesicles, and covered the surface with their unguents, or even irritated it with the nitrico-oxide of mercury, notwithstanding the extreme tenderness of the parts. These pernicious interruptions of the healing process probably gave rise to ulceration, and prolonged the duration of the disease, and thus contributed to mislead practitioners in their views respecting its nature.

Herpes circinatus.—This form of the herpes is vulgarly called *ringworm*, and is, in this country, a very slight affection, being unaccompanied with any disorder of the constitution. It appears in small circular patches, in which the vesicles arise only round the circumference; these are small, with moderately red bases, and contain a transparent fluid, which is discharged in three or four days, when little prominent dark scabs form over them. The central area in each vesicular ring is at first free from any eruption; but the surface becomes somewhat rough, and of a dull red colour, and throws off an exfoliation, as the vesicular eruption declines, which terminates in about week with the falling off of the scabs, leaving the cuticle red for a short time.

The whole disease, however, does not conclude so soon, for there is commonly a succession of the vesicular circles on the upper parts of the body, as the face and neck, and the arms and the shoulders, which have occasionally extended to the lower extremities, protracting the duration of the whole to the end of the second or third week. No inconvenience, however, attends the eruption, except the disagreeable itching and tingling in the patches.

The herpetic ringworm is most commonly seen in children, and has been deemed contagious. It has sometimes, indeed, been observed in several children, in one school or family, at the same time; but this was

most probably to be attributed to the season, or some other common cause, since none of the other species of herpes are communicable by contact. It is scarcely necessary to point out here the difference between this vesicular ringworm and the contagious pustular eruption of the scalp and forehead, which bears a similar popular appellation.

The itching and tingling are considerably alleviated by the use of astringent and slightly stimulant applications, and the vesicles are somewhat repressed by the same expedients. It is a popular practice to besmear them with ink; but solutions of the salts of iron, copper, or zinc, or of borax, alum, &c. is a less dirty form, and they answer the same end.

Another form of herpes circinatus sometimes occurs, in which the whole area of the circles is covered with close set vesicles, and the whole is surrounded by a circular inflamed border. The vesicles are of a considerable size, and filled with transparent lymph. The pain, heat, and irritation in the part, are very distressing, and there is often a considerable constitutional disturbance accompanying the eruption. One cluster forms after another in rapid succession on the face, arms, and neck, and sometimes on the day following on the trunk and lower limbs. The pain, feverishness, and inquietude, do not abate till the sixth day of the eruption, when the vesicles flatten, and the inflammation subsides. On the ninth and tenth days a scabby crust begins to form on some, while others dry, and exfoliate, the whole disease terminating about the fifteenth day.

All the forms of herpes appear to be more severe in warm climates than in our northern latitudes; and the inhabitants of the former are liable to a variety of herpetic ringworm, which is almost unknown here. This variety differs materially from the preceding in its course, and is of much longer duration; for it does not heal with the disappearance of the first vesicles, but its area continually dilates by the extension of the vesicular margin. The vesicles terminate in ulcera-

tions, which are often of a considerable depth; and while these undergo the healing process, a new circle of vesicles rises beyond them, which passes through a similar course, and is succeeded by another circle exterior to itself; and thus the disease proceeds, often to a great extent, the internal parts of the ring healing as the ulcerous and vesicular circumference expands.

Herpes labialis.—A vesicular eruption upon the edge of the upper and under lip, and at the angle of the mouth, sometimes forming a semicircle, or even completing a circle round the mouth, by the successive rising of the vesicles, is very common, and has been described by the oldest writers. At first the vesicles contain a transparent lymph, which in the course of twenty-four hours becomes turbid, and of a yellowish white colour, and ultimately assumes a puriform appearance. The lips become red, hard, and tumid, as well as sore, stiff, and painful, with a sensation of great heat and smarting, which continues troublesome for three or four days, until the fluid is discharged, and thick dark scabs are formed over the excoriated parts. The swelling then subsides, and in four or five days more the crusts begin to fall off; the whole duration being, as in the other herpetic affections, about ten or twelve days.

The labial herpes occasionally appears as an idiopatic affection originating from cold, fatigue, &c. and is then preceded for about three days by the usual febrile symptoms—shiverings, headache, pains in the limbs and the stomach, with nausea, lassitude, and languor. Under these circumstances a sort of herpetic sore-throat is sometimes connected with it; a similar eruption of inflamed vesicles taking place over the tonsils and uvula, and producing considerable pain and difficulty of deglutition. The internal vesicles being kept in a state of moisture, form slight ulcerations when they break; but these heal about the eighth or ninth day, while the scabs are drying upon the external eruption.

The herpes labialis, however, occurs most frequently

in the course of the diseases of the viscera, of which it is symptomatic, and often critical; for these diseases are frequently alleviated as soon as it appears. Such an occurrence is most common in bilious fevers, in cholera and dysentery, in peritonitis, peripneumony, and severe catarrhs; but it is not unfrequent in continued malignant fevers, and even in intermittents.

Herpes præputialis.—This local variety of herpes was not noticed by Dr. Willan; but it is particularly worthy of attention, because it occurs in a situation where it is liable to occasion a practical mistake of serious consequence to the patient. The progress of the herpetic clusters, when seated on the prepuce, so closely resembles that of chancre, as described by some authors, that it may be doubted whether it has not been frequently confounded with the latter.

The attention of the patient is attracted to that part by an extreme itching, with some sense of heat; and on examining the prepuce he finds one, or sometimes two red patches, about the size of a silver penny, upon which are clustered five or six minute transparent vesicles, which from their extreme tenuity appear of the same red hue as the base on which they stand. In the course of twenty-four or thirty hours the vesicles enlarge, and become of a milky hue, having lost their transparency; and on the third day they are coherent, and assume an almost pustular appearance. If the eruption is seated within that part of the prepuce which is in many individuals extended over the glands, so that the vesicles are kept constantly covered and moist (like those that occur in the throat,) they commonly break about the fourth or fifth day, and form a small ulceration upon each patch. This discharges a little turbid serum, and has a white base, with a slight elevation at the edges; and by an inaccurate or inexperienced observer it may be readily mistaken for chancre; more especially if any escharotic has been applied to it, which produces much irritation, as well as a deep-seated hardness beneath the sore, such as is felt in true chan-

ere. If no irritant be applied, the slight ulceration continues till the ninth or tenth day nearly unchanged, and then begins to heal; which process is completed by the twelfth, and the scabs fall off on the thirteenth or fourteenth day.

When the patches occur, however, on the exterior portion of the prepuce, or where that part does not cover the glands, the duration of the eruption is shortened, and ulceration does not actually take place. The contents of the vesicles begin to dry about the sixth day, and soon form a small, hard, acuminated scab, under which, if it be not rubbed off, the part is entirely healed by the ninth or tenth day, after which the little indented scab is loosened, and falls out.

This circumstance suggests the propriety of avoiding not only irritative, but even unctuous or moist applications, in the treatment of this variety of herpes. And accordingly it will be found, that, where ulceration occurs within the prepuce, it will proceed with less irritation, and its course will be brought within the period above mentioned, if a little clean dry lint alone be interposed twice a day between the prepuce and the glands.

I have not been able to ascertain the causes of this eruption on the prepuce. Mr. Pearson is inclined to ascribe it to the previous use of mercury. Whencesoever it may originate, it is liable to recur in the same individual, and often at intervals of six or eight weeks.

PSORA.

810. [Psora, Scabies, or Itch, is a contagious inflammatory affection of the skin, placed by Willan among pustules; but as suppuration only takes place in aggravated cases, it is with greater propriety looked upon by Rayer as a vesicular disease. It makes its appearance in little elevations of a rose tint, in robust persons, and colourless in others; generally in the first place upon the parts most exposed to contact, as the hands, and proceeding to other parts of the body, but particularly affecting the skin between the fingers and the articula-

tions of the joints. These dots produce considerable itching, and shortly after their first appearance assume a vesicular character, and being irritated by scratching, which increases the inflammation of the skin, become developed into pustules. Most generally, however, the eruption stops at the vesiculous stage, and the vesicles bursting, exude a viscid fluid, which forms scabs; it is worst in warm weather and on going to bed, and is always aggravated in sanguineous persons, and by any excess, as stimulating food and liquors: in these cases the eruption is most likely to proceed to suppuration. This disease has been ascribed to an insect—the acarus scabiei, described by Mead, Schwiebe, Baker, Linnæus, and several other writers, to burrow beneath the skin: at a more recent period the existence of this insect was doubted, but it has lately been observed in some cases of psora, in Paris. Itch, in its mildest form, at the commencement is styled by Dr. Willan, Scabies papuliformis; when in the vesicular stage, S. lymphatica; in the pustular form, S. purulenta; and S cachectica, when occurring in persons of weak and debilitated constitutions.]

ECZEMA.

311. [This affection is non-contagious, and consists of an eruption of small vesicles, which are closely set together, and in its mildest form accompanied by little if any surrounding inflammation, and no fever, terminating in re absorption of the serous fluid, by excoriation or by desquamation. Though not limited to any one part of the body, the axilla, groin, and ears are its most common seat; and it is also frequent on the back of the hands, face, scalp, neck, forearms, thighs, and margin of the anus; on the scrotum of men, and on the vulva and nipple of women. It may properly be divided into acute and chronic. Acute eczema is announced by a sensation of itching, heat, and tingling, in the part affected. In its simplest form, *eczema simplex*, the vesicles are small, close, and with scarcely any in-

flammation at their base; the serum is commonly reabsorbed; if not, the vesicle bursts, and the humour forms a minute scab on its surface, which falls off, leaving no trace on the skin. Should the inflammation proceed further, the skin puts on an erythematous appearance, which being covered with confluent vesicles, is called *eczema rubrum*. Towards the fifth or sixth day the vesicles burst, yielding a reddish serosity, and forming yellowish scabs on the surface. The last and most severe stage consists in the formation of small psydraceous pustules, similar to those of impetigo—*eczema impetigenodes*. It is preceded by intolerable itching, burning heat, and swelling: the vesicles are confluent, and their contents, which are at first transparent, become purulent, and when ruptured the discharge gives out an odour of burnt hay, which by its acridity causes a great deal of irritation. The two latter species are accompanied by considerable febrile action, proportionate to the local irritation. Acute eczema is usually confined to the part in which it is developed, and its duration is not usually extended beyond the third week. It is frequently produced by the heat of the sun in warm weather, when it is commonly known by the term *heat-spots*, or *eczema solare* of Willan. *Chronic eczema* may follow either of the acute varieties. On the vesicles bursting the inflammation is greatly increased, and extends into the dermis or subcutaneous tissue; the skin cracks, excoriates, and discharges an ichorous matter; the itching is so tormenting as to induce the most violent scratching, to the extent of producing bleeding. This may continue for a longer or shorter space of time, sometimes for several months, when the inflammatory action subsides, and the epidermis, thickened by the discharge, desquamates time after time in large transparent plates, leaving the skin cracked, and of a pale red tint. In the chronic form the eruption may extend over the whole of the body. The causes of idiopathic eczema are solar or artificial heat, irritation by contact of acrid or corroding substances, as me-

tallic oxides, plaisters, blisters, want of cleanliness, &c. When it occurs from irritation of the internal organs, it is occasioned by the abuse of food or spirituous liquors. One variety must not be forgotten, viz that produced by the action of mercury—*Eczema mercuriale.* It puts on all the characters of *E. rubrum,* but the cause which produces it justifies the distinction by which it is marked.]

MILIARIA.

812. [This is an acute contagious inflammation, which appears all over the surface, at the same time that the gastro-intestinal canal is similarly affected. It is ushered in by a peculiar sour sweating, lassitude, loss of appetite, constriction in the epigastrium, and dirty white tongue. About the second or third day the eruption is announced by slight smarting; the vesicles are about the size of a millet-seed, pale and transparent, sometimes interspersed by inflamed papulæ, and remaining for two or three days, when they dry and desquamate; the odour of the sweat, which is very peculiar, has been compared to rotten straw. Sometimes the eruption will occur without the presence of any constitutional symptoms, while on the other hand they are sometimes so severe as to occasion death. In that form, known in Picardy, Languedoc, Normandy, &c. by the name of *sweating disease,* it appears as an epidemic, producing the most severe description of gastro-enteritis, and terminating in death, by determination of blood to the brain, sometimes within the short period of twenty-four or forty-eight hours, from its commencement. From herpes it is distinguished by the smallness of its vesicles, and its general diffusion over the skin; and from eczema, by its abundant and peculiar sweat, and contagious character.]

VARICELLA. (*Chicken Pox.*)

813. [On the first or second day of a febrile attack there appears an eruption of small red protuberances,

rather oblong than circular, with a shining surface, in the centre of which, minute, transparent vesicles, are soon formed, which are filled with white transparent and inodorous fluid, which does not possess the power of inducing the same disease by inoculation. The three stages of eruption, vesication, and desiccation, are not well marked; it terminates from the sixth to the tenth day; never fatal, nor does the skin retain any mark whatever. This is the usual appearance of varicella, but sometimes it assumes a pustulous form, in which case the accompanying symptoms are more severe, and the disease assumes to some extent the appearance of small pox. This form has been divided into three varieties, which varying in the external character of the pustules, and in the progress of the eruption, have received the names of conoid, globulous, and umbilicated varicella. Pustulous varicella has been, and may readily be, confounded with variola, some believing that it is an imperfect form of variola. The serous character of chicken-pox, with the periods it observes, will be sufficient to distinguish it from variola.]

VACCINIA, OR COW-POX.

814. This is always produced by the inoculation of matter either taken directly from the cow, or from vaccine pustules on the human subject. On the third or fourth day a small, hard, and colourless eminence, is observed where the matter was inserted; then a vesicle, depressed in the centre, which gradually increases in size, and on the sixth or seventh day presents a tense, prominent head, surrounded by an areola of a deep red colour. If at this period we open the vesicle, a limpid, transparent, and viscid fluid exudes, which has the power of reproducing the same affection. On the eighth and tenth days the swelling and redness increase, the vesicle becomes broad, whitish, and less prominent; on the twelfth desiccation commences, and spreads from the centre to the circumference; a hard, dry, reddish

crustation is formed, which falls off about the twentieth day, leaving a well-marked and indelible cicatrix.

Every eruption after vaccination not presenting these characters is spurious, and not to be relied on.

Order IV.—Pustulæ.

815. [The diseases of this order are characterized by small tumours formed by minute and circumscribed effusions of pus beneath the cuticle. Each of these pustules is usually distinct, and placed on an inflamed base; occasionally several are agglomerated on a common base, which is redder, and partakes of a higher degree of inflammation, than the vesicle. They terminate in scabby crusts, superficial ulcerations, or in tuberculous indurations.]

variola. (*Small Pox.*)

816. [This is a contagious acute inflammation, attended with a considerable degree of fever, and is usually considered under the heads of discrete and confluent variola.

Distinct or discrete variola.—After a febrile attack of three or four days, or some symptoms of gastric irritation of variable intensity, there appears successively on the neck, face, chest, and then on the rest of the body, an eruption of small, red, distinct, indurated points; on the following day these increase in number and prominence, and become vesicular on their summits. By the third or fourth day some of these put on the appearance of pustules, and some are likewise observed at the openings of the mucous canals, as the mouth, pharynx, eyelids, prepuce, and vulva; the skin between the pustules is red and swollen. On opening a pustule there exudes a yellow honey-like matter; they are more numerous in the face, and consequently produce a higher degree of tumefaction, tension, heat, and pain here, than in any other part of the body. Hitherto, during the progress of the eruption, the fever has abated, but from the fifth day of its appearance secondary fever sets in.

On the eighth day from the access of the eruption the inflammation begins to decline, the swelling of the face diminishes, the pustules dry up, and in two or three days time fall off in scabs, leaving circular spots or cicatrices of a brown red colour, which are sometimes the seat of furfuraceous desquamation.

Confluent variola.—Here the premonitory symptoms and the whole disease is of a severer character: the pain in the epigastrium, head, and loins, is very intense, accompanied by vomiting, delirium, and even convulsions; the eruption appears simultaneously on the second or third day; the pustules are smaller, flatter, closer, and less circumscribed; there is a sensation of pain and tension over the whole skin, which emits a peculiar, disagreeable odour, and the crusts fall off about the twentieth day, exposing a surface on which there is at first no distinct cicatrix, but which, throwing off a quantity of furfuraceous scales, ultimately leaves the skin greatly disfigured by deep pits. This dreadful disease is often epidemic; occurs most commonly in infancy, and usually but once during life. Before the eruption breaks out it may be confounded with the various exanthematous fevers, afterwards with varicella. It may be complicated with rubeola, scarlatina, petechiæ, erysipelas, erythema, and with various acute inflammations of the internal organs.]

ECTHYMA.

317. [This is an eruption of distinct phlyzaceous pustules, unaccompanied by fever, and non-contagious; they frequently appear successively on several regions of the body, terminating in brown crusts, under which a cicatrix is formed, or more rarely in ulceration, or in small indurated tubercles. *Acute ecthyma* is a rare form, which first appears presenting red circumscribed elevations; afterwards they are found to contain pus, first in minute and then in greater quantities, with hard inflamed bases. In one or two days the pustules burst, and discharge a purulent matter, which forms crusts,

which are detached in one or two weeks, leaving red spots like those of variola, but more superficial. *Chronic ecthyma* is a more frequent disease, and appears in successive eruptions on the neck, scalp, limbs, and face: it runs through the same series of changes as the acute form, and the pustules are quite separate and distinct, never blending with each other. This eruption (*E. vulgare*) may continue for several months, and sometimes the pustules acquire a very large size, and affect the subcutaneous cellular tissue, having hard inflamed bases of a violet tint (*E. surdum*), and discharging in eight or ten days a sanious fluid, and forming crusts, which on falling off leave cicatrices of a deep red colour. Chronic ecthyma sometimes occurs in weak and delicate children (*E. infantilis*), and in aged, ill-fed, and dissipated persons (*E. cachecticum*). The causes of the disease are cold, bad food, moisture, irregular habits, and any thing which tends to debilitate the constitution; hence it often sets in after variola, scarlatina, and other cutaneous phlegmasiæ.]

CUPEROSA OR ACNE.

818. [This is a chronic inflammation of the skin; in its simple form (*Acne simplex*) presenting itself in the successive development of red pustules on the face, attended by heat and itching: each pustule suppurates and dries independently of the rest; complete maturation does not take place till the second week. The sebaceous follicles of the forehead and chin of young persons are most liable to it, the inflammation being very slow; the little red elevations do not always proceed to suppuration. The sebaceous follicles between the pustules are sometimes marked by black points, (particularly in the smoky atmosphere of town) formed by an unctuous humour within them (*Acne punctata*). Another, and a severer form, involves the skin and subcutaneous cellular tissue, producing hardiness and tumefaction, (*Acne indurata*): these leave a permanent livid tint and depression on the skin. "Sometimes

(to use the words of Mr. Plumbe) the extent of the mischiefs of follicular obstruction is confined to the tip of the nose, producing a considerable enlargement of these parts; and, perhaps, of all deviations from health this is one which obtains the least commiseration. The general impression is that it is the offspring of what is called good living: and in the only case I have met with, when hard drinking did form part of the habits of the patient, an extraordinary appetite, not of the most delicate kind, was well known to exist." This is named *Acne rosacea*, or *Gutta rosea*, and is a disease of middle or advanced age. In addition to the eruption the skin is of a shining redness, irregularly granulated, and variegated by reticulations of enlarged cutaneous veins. A cure can seldom be hoped for, inasmuch as the structural derangement arises from a mode of living which persons of a luxurious habit will never discontinue.]

MENTAGRA.

819. [Mentagra, or Sycosis, can scarcely be looked upon as a different disease from Acne: it distinguishes that form of Cuperose which attacks the parts of the face covered with hair, as the chin and cheeks. The inflammation does not extend beyond the reticular body, and cicatrices are never formed. If several pustules unite, phlegmonous inflammation of the sub-cutaneous cellular tissue may be produced, causing great swelling of the skin, and forming scabs, which appear like vegetations. The bulbs of the hair often participate in the disease, and sometimes the chin is for a time deprived of the hair.]

IMPETIGO.

820. A non-contagious eruption of psydraceous pustules, which burst, and discharge a humour, which dries in yellow crusts. The two principal species are *I. figurata* and *sparsa* of Willan, either of which may be acute or chronic. Impetigo *figurata*, distinguished by

the grouping together of the pustules, has its seat commonly in the face, and especially the cheeks and lips; incidental to young persons of a lymphatic temperament, and usually unattended by febrile symptoms, though not necessarily. It first appears in small red spots of a lightish colour; these become converted into yellow psydraceous pustules, disposed in groups, running into each other, and being surrounded by a red and inflamed circle: they produce considerable itching, and burst about the fifth day. The discharge concretes into yellowish or greenish scabs, which become increased in thickness by exudation from the abraded surface beneath: these gradually dry, and falling off, leave furfuraceous spots of a reddish tint. In the chronic form, successive crops of pustules are developed: the inflammation affects the entire thickness of the skin, and also the sub-cutaneous cellular tissue. When the old crusts fall off, fresh ones are successively formed by exudations from the raw surfaces, which as they gradually heal, yield scales which are progressively thinner and thinner, and ultimately mere furfuraceous exfoliations. It may continue for several years, especially in old and debilitated persons. *Impetigo sparsa* is so styled from the scattered arrangement of the pustules: its favourite origin is in the lower extremities, about the ankle and instep; less frequently on the wrists and hands. The scabs are smaller than on those which are grouped; when about to fall off, fresh eruptions break out, sometimes increasing to such an extent as to cover the entire leg. It produces great heat and itching. When the scabs are dry and rough, it has been styled *I. scabida*. The aggregated crust may increase by a fresh supply of matter escaping through a fissure in its surface. When the inflammation is arrested, the crusts dry and fall off, leaving the skin of a reddish colour, marked with cicatrices. Sometimes this disease is complicated with vesicles of an eczematous character—*Impetigo eczematodes*, or *Eczema impetiginodes*; and sometimes the skin at the commencement of the disease puts on an erysipelatous

apppearance—*I. erysipelatodes.* When scabs fall off, and fresh pustules are produced on the margin of the denuded surface, the term *rodens* has been applied.

TINEA, OR PORRIGO.

821 [Tinea is a term given to several species of pustular affections, which differ essentially in their nature. On this account Rayer has marked out four kinds: viz. *T. favosa*, *annulare*, *granulata*, and *mucosa*, which he considers to be separated by something more than specific differences, some being contagious, others not. In compliance with the common custom he has retained them as species of tinea, but treats them separately.

a. Tinea favosa "is a chronic contagious inflammation of the skin, characterized by very small pustules, the summits of which soon become converted into yellow, very adherent crusts, depressed into a cup-like shape." These may be isolated or agglomerated. It is most frequent where the cellular tissue is thick and dense, as in the scalp, forehead, and temples. When it first appears the pustules are so small as to be scarcely visible. Crusts are produced almost as soon as pustules are formed; these enlarge, and become depressed in the centre. Sometimes several crusts may become aggregated into one, even so extensively as to cover the entire head. The lenticular elevations produced by the depressions have been compared to certain kinds of lichen or lupine seeds—(*Porrigo lupinosa*, Willan.) At first the crusts are yellow, but afterwards they become whitened, cracked, and powdery: the odour is very offensive. The skin between the pustules often assumes an erythematous appearance, succeeded by furfuraceous desquamation, and the hair frequently falls off, from inflammation of the bulbs. Inveterate tinea may produce extensive disease of the subcutaneous cellular tissue, and is said even to have affected the periosteum and bones of the cranium.

b. Tinea annulare, or *ring-worm*, consists of chronic contagious pustules disposed in circular groups, and

commonly developed on the scalp. "It shews itself by circular, red, and inflamed patches, upon which small pustules are elevated of a yellowish white, and having the centre generally pierced by a hair. The circle gradually increases, acquiring from half an inch to an inch and a half in diameter. The humour of the pustules thickens, forming thin hard crusts, but little adherent, and beneath which the skin is red and inflamed. In the space of two or three weeks, not only are the areas of the first groups extended, but new ones are formed, either spontaneously or from inoculation, caused by the child scratching its scalp. If the disease is left to itself the pustulous groups become very numerous, and may unite at their edges, forming more or less irregular surfaces. Yet the circular disposition of the primary groups is still indicated by the arcs of the circles distinguished at the circumference of these irregular surfaces." The hair falls off, and is reproduced several times in succession. The disease terminates by furfuraceous desquamation, but until this and the redness entirely disappears, the patient cannot be pronounced cured. It is a very obstinate disease, and is incidental to children.

c. Tinea granulata, scalled head.—Here the pustules are irregularly scattered over the scalp, to which they are exclusively confined, chiefly shewing themselves at its back part. The pustules are yellow, and form scabs of a brown or grey colour, which become powdery, like dry mortar, and are generally prominent; never cup-shaped: it may continue for weeks, and even years. When chronic it produces baldness in the part affected. The crusts are not very adherent, and when they dry up they leave the skin red and inflamed, especially when of long standing. There do not appear to be any grounds for believing this disease to be contagious.

d. Tinea mucosa.—In this form of tinea the pustules are small, white, and disposed in irregular groups upon the face and scalp; the skin has an erythematous tint, and the pustules burst about the fifth or sixth day, dis-

charging a fluid, which forms crusts, of a yellow or greenish colour. On the margin of these new pustules form, which run through the same course. This eruption, when it appears in the face, is the *Crusta lactea*, *milk scall*, or *Porrigo larvalis*, of Willan. When the inflammation is very severe the discharge is abundant, the skin of a deep red, and fissured; when chronic, the pustules are few, the progress slow, and the discharge slight. The decline of the disease is known by the scales drying and falling off without being reproduced. The skin for some time is the seat of an erythematous hue, and furfuraceous desquamation: it is not in the least contagious, and most commonly attacks children. Besides these four species, into which Rayer divides the genus, the Tinea, there are other specific names noted by Willan. *Porrigo furfurans* is applied by him to that form in which the crusts fall off in furfuraceous plates, and his *P. scutulata* is divided by Rayer into *Tinea annulare* and *granulata*. There is, however, one form which deserves a more lengthened notice, viz. *Porrigo decalvans*, so named from the effect it produces; for the scalp presents "patches of simple baldness, of an irregularly circular form, on which not a single hair remains, though in the surrounding parts it is as thick as natural." The surface within the patches is smooth, and remarkably white. Dr. Bateman thinks it probable, though not ascertained, that there may be, in the first instance, an eruption of minute achores about the roots of the hair, which are not permanent, and do not discharge any fluid. If such an occurrence can take place, the definition of achor would require to be altered, as it expressly states that "it is succeeded by a scab," which can only be formed by the effusion of matter. I had an opportunity of examining attentively a case of this sort. The subject of it was a youth fourteen years old, the son of a medical gentleman. The patch was about the size of a shilling, and situated behind and below the left ear: it was smooth, but not perceptibly whiter than the sur-

rounding skin. On close inspection, minute dots could be observed in some parts, which were evidently the filaments of the hairs cut off on a level with the surface, as if they had been shaved, though no such operation had been performed: in other parts the baldness appeared complete. I could not, even with the assistance of a glass, discover any pustules, however minute, or even a desquamation of the cuticle, which would most likely have occurred had pustules existed in the first instance, and subsided on the absorption of their contained matter; but round the margins of the bald areola, where some of the hair had been clipped with scissars, I could distinctly perceive, by the help of the glass, on the filaments of several of these hairs, some minute transparent vesicles closely adherent to them, either at their roots or farther on. I am not aware that this has been observed before; and having seen it only in a single instance, I shall not venture to say more than that, if such vesicles be found in other instances, and that the depilation can be traced to them as a cause, it will become necessary to alter the name of the disease, as well as its position in the nosological table.]

Order V.—Papulæ.

822. [The term papule is applied to an inflammatory eruption presenting very minute, hard, resistant elevations; similar to those of vesicles and pustules in their early stage, but distinct from them in being opaque and destitute of fluid, unless the inflammatory action be greatly increased by scratching, in which case they sometimes put on a vesicular appearance. Mr. Plumbe contends that papulæ are always produced "by a minute escape of lymph from a distended vessel." Rayer remarks, "if the large papules of periodical strophulus are pricked deeply with a needle, and then strongly compressed between the fingers, a minute drop of transparent fluid is sometimes expressed; but from the papules of lichen and prurigo, by making even several

punctures, I have never obtained any lymph by pressure, but merely a drop of blood." Rayer also objects to the general notion that papulæ are the inflamed papillæ of the skin, "inasmuch as papules are rarely developed on those parts of the skin where the papillæ are most distinct, viz. the palms of the hands and pulps of the fingers." Papulæ produce severe itching, and terminate in resolution, desquamation, and excoriation. The order is divided into three genera; viz. *Strophulus*, *Lichen*, and *Prurigo*. The two former might very properly be included in one genus, as they only differ in the fact of strophulus being a disease of children, and lichen of adults.]

STROPHULUS.

823. [Those papular eruptions of infants, commonly called red gum and tooth rash, are included under this head. They are owing to the natural vascularity and irritability of the skin in infancy, which may be morbidly excited by different casual circumstances, such as want of attention to cleanliness, exposure to heat, to friction of the clothes, &c.; or by a constitutional cause, such as irritation in the *primæ viæ* or in the gums. Instead of considering the different forms in which this affection is presented to our notice as so many species of a genus, they may be viewed as varieties dependent on accidental circumstances. Thus we may, with Mr. Plumbe, describe them all as consisting of eruptions of pimples occurring during infancy, making their appearance first on parts most exposed, as the face, neck, and hands, but occasionally in other parts. This form is called *strophulus intertinctus*, as the pimples are aggregated into clusters. When they are very red, the term red gum is commonly applied; but if they show a less degree of irritation, the affection is called *strophulus albidus*. In ordinary and mild cases the pimples are few, and interspersed with diffused red patches; but when any feverish excitement occurs, such as that attendant on dentition, the red patches become numerous,

and the papulæ enlarged, some of them being even raised into vesicles by an effusion of serum; and so the affection assumes a more aggravated form, and is called *strophulus confertus*. Occasionally the papulæ are disposed in circular clusters, each consisting of from three to ten, which, with the interveniug skin, are of a high red colour. This is the *strophulus volaticus*, or *feu volage*, in which the clusters appear in succession, turn brown, and desquamate. In other instances the papulæ are of a larger size, smooth and shiuing, and without any surrounding redness; whence they appear of a lighter colour, and give rise to a new term—*strophulus albidus*.]

LICHEN.

824. [This resembles strophulus very closely. It is defined by Willan to be "an extensive eruption of papulæ affecting adults, connected with internal disorder, usually terminating in scurf, recurrent, not contagious." Its most ordinary form is that of an eruption of red papulæ, appearing first on the face and arms, and extending, in three or four days, to the trunk and lower limbs. It is preceded by a slight febrile irritation, which subsides as the eruption appears. This is accompanied by an unpleasant sensatiou of tingling, particularly during the night. It remains stationary for about a week, when the colour begins to fade: it gradually ends in desquamation of the cuticle. This is the *lichen simplex*: it is liable to be mistaken for common itch, but the eruption in the latter is less red, and more humid, being vesicular or pustular, but seldom papular. The distinct and distant papulæ distinguish it from measles or scarlatina, for which, however, it has been mistaken. When the papulæ occur in large patches, and are of a high red colour, with a degree of inflammation diffused round them, this affection is called *lichen agrius*, being of a more inflammatory character than the preceding form. The usual attendants of heat, itching and tingling, are increased to a smarting and scalding by the heat of the bed, or by washing with soap.

The symptoms remit in the morning, but are heightened after dinner. When the papulæ occur on parts covered by hair, as the chest and arms, they not unfrequently have one or more hairs protruding from their centre, and so form the *lichen pilaris*.

The eruption in some instances presents an annulated form, or rather they are arranged in circular clusters, with a well-defined margin. They not unfrequently extend themselves by this papulated border, whilst the central areæ become even, but red and scurfy. This form is designated *lichen circumscriptus*. When the papulæ are of a dark red or livid hue, and are not accompanied by fever, the affection is called *lichen lividus*, which in its characters nearly resembles purpura. Writers on the diseases of tropical climates constantly notice a prickly tingling sensation in the skin, which is very troublesome to Europeans. This has been called *lichen tropicus*, but it is rather an effect of the climate than a disease.]

PRURIGO.

825. [*Symptoms.*—The characteristic symptoms of this genus are, a severe itching, accompanied by an eruption of papulæ of nearly the same colour with the adjoining cuticle. It affects the whole surface of the skin, under three varieties of form, as well as some parts of the body locally.

Prurigo mitis is accompanied by soft and smooth papulæ, somewhat larger and less acuminated than those of lichen, and seldom appearing red or inflamed except from violent friction. Hence an inattentive observer may overlook the papulæ altogether, more especially as a number of small, thin, black scabs, are here and there conspicuous, and arrest his attention. These originate from the concretion of a little watery humour, mixed with blood, which oozes out when the tops of the papulæ are removed by the violent rubbing or scratching which the severe itching demands. This constant friction sometimes also produces inflamed pustules; which are

merely incidental, however, when they occur at an early period of the complaint. The itching is much aggravated both by sudden exposure to the air, and by heat; whence it is particularly distressing when the patient undresses himself, and often prevents sleep for several hours after he gets into bed.

This eruption mostly affects young persons, and commonly occurs in the spring or beginning of summer. It is relieved, after a little time, by a steady perseverance in the use of the tepid bath, or of regular ablution with warm water, although at first this stimulus slightly aggravates the eruption. The internal use of sulphur, alone, or combined with soda or a little nitre, continued for a short time, contributes to lessen the cutaneous irritation; and may be followed by the exhibition of the mineral acids. Under these remedies the disorder gradually disappears; but if the washing be neglected, and a system of uncleanliness in the apparel be pursued, it will continue during several months, and may ultimately terminate in the contagious scabies.

Prurigo formicans.—This affection differs materially from the preceding in the obstinacy and severity of its symptoms, although its appearances are not very dissimilar. The itching accompanying it is incessant, and is combined with various other painful sensations; as of insects creeping over and stinging the skin, or of hot needles piercing it. On undressing, or standing before a fire, but above all on becoming warm in bed, these sensations are greatly aggravated; and friction not only produces redness, but raises large wheals, which, however, presently subside. The little black scabs, which form upon the abraded papulæ, are seen spotting the whole surface, while the colourless papulæ are often so minute as nearly to escape observation.

This prurigo occurs in adults, and is not peculiar to any season. It affects the whole of the trunk and limbs, except the feet and palms of the hands, but is most copious in those parts over which the dress is tightest. Its duration is generally considerable, sometimes extending,

with short intermissions, to two years or more. It is never, however, converted, like the preceding species, into the itch, nor becomes contagious; but it occasionally ends in impetigo.

Prurigo senilis.—The frequent occurrence of prurigo in old age, and the difficulty of curing it, have been the subject of universal observation. The sensation of itching, in the prurigo of that period of life, is as intolerable and more permanent than in the *P. formicans;* and the appearances which it exhibits are very similar, except that the papulæ are for the most part larger. The comfort of the remainder of life is sometimes entirely destroyed by the occurrence of the disease.

A warm bath affords the most effectual alleviation of the patient's distress, but its influence is temporary.

The disorder seems to be connected with a languid state of the constitution in general, and of the cutaneous circulation in particular; hence the sulphureous waters at Harrowgate, employed both internally and externally at the same time, afford on the whole the most decided benefit. A warm sea-water bath has also been found serviceable. Sometimes stimulant lotions, containing the oxymuriate of mercury, the liquor ammonia acetatis, or alcohol, are productive of great relief, and occasionally render the condition of the patient comparatively comfortable, or even remove the disease. When the surface is not much abraded, the oxymuriate will be borne to the extent of two grains to the ounce of an aqueous or weak spirituous vehicle; but it is generally necessary to begin with a much smaller proportion.

This mineral salt is likewise useful in destroying the pediculi, which are not unfrequently generated when the prurigo senilis is present. Where the skin is not abraded by scratching, the oil of turpentine, much diluted with oil of almonds, may be applied, with more decided effect, for the destruction of these insects.]

Order VI.—Tuberculæ

826. [Are firm, hard, resistant elevations of the skin, of the colour of the skin, or dark red; they are almost

all chronic, and though occasionally stationary, gradually become more and more inveterate, suppurating and ulcerating, so as to destroy the texture on which they occur, and too frequently without any chance of arresting their progress.]

LUPUS, OR NOLI ME TANGERE.

827. [That slow corroding tubercular disease which almost invariably attacks the nose and lips, deeply burrowing and spreading, unimpeded by any remedial means that have hitherto been devised. It generally at first appears as a single tubercle, around the base of which the skin is of a violaceous tint, and indurated. After a time the tubercle suppurates and ulcerates; the edges of the ulcer are hard, and discharge an acrid humour. New tubercles form around the original sore, which go through the same course, and at times produce yellow crusts. The ulceration proceeds to destroy the cellular tissue and cartilages of the nose, creating the most frightful disfigurement, which is rarely entirely arrested by any remedial means. It generally occurs in persons of a scrophulous habit.]

CANCER.

828. [The pathology of this disease, strictly speaking, belongs to the province of surgery; but inasmuch as it sometimes commences primarily in the skin, it requires to be noticed here. It usually attacks the skin of the face, especially the nose and lips, and also the organs of generation and anus, presenting itself in the form of a large tubercle, of a livid colour, with considerable induration, itching, and lancination. In this state it may remain for a considerable time, when, perhaps stimulated by some irritating cause, it increases, becomes painful, extends into the cellular tissue, and ultimately ulcerates, and gives out a sanious discharge or a fungous growth. The subsequent progress of the disease is that of ordinary cancer.]

ELEPHANTIASIS.

828*. [Elephantiasis of the Greeks is a "chronic apyretic inflammation, characterized by numerous indolent livid tubercles, sometimes of the same colour as the skin, varying from the size of a lentil to that of a large filbert, and which are principally developed on the face and ears, upper and lower extremities, and on the palatine vault. They terminate by resolution, or in small ulcerations, which rarely extend in size or depth, and are covered by adherent crusts, beneath which a cicatrix forms." The face is most generally affected; the tubercles may continue stationary for a long time, but they generally end in suppuration and ulceration, leaving but little hope of cure. Besides this disease, the term elephantiasis (of the Arabs) is used to designate "an enormously tumid condition of the leg, arising from a repeated effusion and retention of a lymphatic and gelatinous matter in the cellular membrane under the skin, in consequence of inflammation of the lymphatic glands and vessels." The skin, too, becomes thickened in the advanced stages, and its surface hard, dark, and rough. Dr. Bateman says, the effusion first takes place after a febrile paroxysm, "in which the inguinal glands of the side about to be affected are inflamed, and the limb is subsequently augmented in bulk by a repetition of attacks. It is sometimes called 'Barbadoes leg.'"]

FRAMBŒSIA, OR YAWS.

829. [This disease, which is endemic in Africa and the West Indies, amongst the negroes, is propagated by specific contagion, and taken only once during life. It is preceded for some time by a slight febrile condition, which ends in an eruption on the face, groins, axillæ, of pimples, according to some, or pustules according to others, which are at first minute, but gradually enlarge to the size of a sixpence. When the cuticle is broken, a foul crust is formed, from under which a fungous ex-

crescence shoots up in some instances. As the disease declines, the fungus diminishes, and the surface heals without a scar or depression. It takes a long time in going through its course, varying, in different individuals, from six to nine months, or even a year. It is by no means dangerous; though it resembles the exanthemata in being conveyed from one person to another (not previously affected) by contagion, it differs from them, in not being propagated by effluvia.]

Order VII.—Squammæ.

830. [This order comprehends those diseases of the skin which, originating in inflammation of the rete mucosum, produce exfoliations of the skin, in the form of scales. The first apprisal is by the eruption of "small red elevations, which become hard, prominent, and as if papulous." These elevations aggregate, and throw those scales which form the typical character of the order. By detaching the scales the reticular body is seen to be red and inflamed. Itching, and obstruction of the cutaneous transpiration, are accompaniments of these diseases. Rayer observes, "It is true squamæ are observed in the secondary state of some papulous and vesiculous diseases, in chronic eczema, and lichen agrius, but vesicles or papules are always found in the neighbourhood of the squamous patches, which declare the nature of the affection. These are the genera in this order—viz. lepra, psoriasis, and pityriasis; the two former have so many affinities as barely to merit a separate consideration.]

Lepra.

831. [This disease exhibits at its first appearance red inflamed patches of a circular form, from which exfoliations of scales more or less extensive are constantly produced, consisting of morbid cuticle. In these we never observe any appearance of a vesicular or pustular formation. *a. Lepra vulgaris*, the common form of the disease, commences in small red spots, of the size and

form of a split pea, at first smooth, and elevated above the surrounding skin, but in a day or two they exhibit thin white scales on their tops. In three or four days these spots are flattened and dilated, so as to equal in size a silver penny, becoming at the same time more scaly: they continue to enlarge, still retaining their circular form, being commonly surrounded by a red and slightly elevated border, which remains scaly after the central area has recovered its texture. The leprous patches usually appear first on the extremities, at the elbow or below the knee; from these points they extend to the arms and thighs, to the breast and shoulders, as well as to the loins and sides of the abdomen; also, in some instances, to the hairy scalp; but though they seldom reach the face, there is still some scaliness on a few parts of it. *b. Lepra alphoides* differs from the preceding form in the small size of the circular patches, which seldom extend beyond a few lines in diameter, and in the minuteness of the scales. *c. Lepra nigricans* resembles the lepra vulgaris in its form and distribution, and differs only in the dark and almost livid colour of the patches, which appears to be merely an effect of debilitating causes, such as bad food, fatigue, anxiety.]

PSORIASIS.

832. This disease, which is commonly called scaly tetter, presents various forms, and, like lepra, is marked by roughness and scaliness of the cuticle, with some degree of redness underneath. It differs, however, from lepra in some respects; for its patches are of an irregular form, never presenting the oval or circular outline, or elevated and inflamed border, which mark the latter; the surface under the scales is also more tender and irritable, and the skin is often divided by fissures, or rhagades. It is often attended by some constitutional disorder, and is liable to cease and return at certain seasons. *a. Psoriasis guttata* nearly resembles lepra, being characterized by small distinct patches of scales,

without, however, the circular form and elevated border of the latter disease: there is little or no inflammation round them. *b. Psoriasis diffusa* consists of irregular, rough, and reddish patches, of various sizes, interspersed with chaps and scales, the surface of which is exceedingly tender and irritable. Though the patches are at first separate, they are apt to expand and become confluent. *c. Psoriasis gyrata* is marked by a tortuous or rather vermiform appearance of the patches; sometimes they are semicircular, or even circular, with tortuous appendages, and are often arranged in a similar manner on each breast, or on each side of the spine. *d. Psoriasis inveterata* is the most extensive and severe form of the disease, being characterized by an almost universal scaliness, and a harsh, dry, and thickened state of the skin. It begins in separate patches on the extremities, and extends rapidly, so as to cover nearly the entire surface of the body. The scales are quickly produced and cast off, and the skin is red, deeply furrowed, and rigid, so that motion is often difficult and painful.

Some varieties of this disease are usually noticed; but it is quite sufficient for our present purpose to enumerate them as they are taken merely from the parts of the body which they occupy: they are as follows:—psoriasis labialis, scrotalis, præputii ophthalmica, palmaria.

PITYRIASIS.

833. [This affection is marked by irregular patches of thin scales, which continually exfoliate and reenr, but never form crusts; nor are they accompanied by excoriations. *a. Pityriasis capitis*, or dandriff, appears on the upper part of the head as a slight whitish scurf, but towards the occiput assumes the form of large flat semi-transparent scales. *b. P. versicolor* presents itself as a chequered discoloration of the skin, which is of a yellowish or brown hue, appearing about the breast, abdomen, shoulders, and arms. The patches are ren-

dered somewhat rough by minute scales: they are sometimes slightly red, and are then accompanied by itching. Another variety is mentioned by Bateman, viz. pityriasis rubra, but it differs in nothing worth notice from the preceding.]

Order VIII.—Lineal.

834. [This order is very properly introduced by Rayer, for the purpose of noting such inflammatory affections of the skin, as *chaps* and *cracks*, which appear in the lips, nostrils, vulva, prepuce, anus, nipples, hands, feet, &c. Cold, especially in delicate skins, is a very common cause of these affections, and they are frequently produced by irritating substances. "Fullers, from the fœtid urine they use in bleaching, and in getting the grease out of the tissue of the wool; bricklayers who use quick lime; miners in lead and copper; forgers and braziers, are all liable to them." Fissures also occur consecutively to vesiculous, pustulous, and squamous affections.]

II.

Inflammations of the skin consequent on the absorption of a specific poison.

Syphiloid eruptions.

835. [Very many of the inflammatory diseases of the skin already mentioned are consequent on syphilis, and although the peculiarities produced by this specific cause might have been noted when treating of each disease separately, I have thought it advantageous, for the sake of perspicuity, and on account of the importance of the morbific agent, to consider these eruptions in a section by themselves. *a. Syphilitic lepra.*—This is one of the most common forms of syphiloid eruption, making its appearance in small hard violaceous spots; the progress towards scaling is that of common lepra, but the decisive mark of the syphilitic taint is the *coppery colour of the spots*. If left to itself the disease may run

on to an extent to produce, *b. Psydraceous* or *Phlyzaceous pustules*, simulating ecthyma or variola, but still bearing the characteristic mark, viz. areolæ of a copper colour, and when they suppurate, and the crusts falls off, the exposed surfaces or cicatrices have a coppery hue. The psydraceous pustules often terminate in induration, producing, *c. Tubercles*, like cuperosa, and distributed in copper-coloured groups over the face; these sometimes form ulcers, the edges of which are surrounded by tubercles. *d. Papulæ* are sometimes produced (*Lichen syphiliticus*) in the form of "small, solid, brownish, conical elevations, surrounded by very small areolæ," and sometimes also, *e. Exanthematous* eruptions, (*Roseola syphilitica,*) fissures, and every variety of cuticular inflammation are discovered. It is seldom that the eruption is confined to a single generic form; on the contrary, all the possible varieties frequently occur together, deriving their existence from the tainted and cachectic condition of the system, and bearing, as their pathognomonic character, the coppery hue.]

III.

CONGESTIONS AND HÆMORRHAGES OF THE SKIN.

836. [In this class are considered such discolorations of the skin as are produced by the mere infiltration of blood into the subcutaneous cellular texture, or within the areola of skin itself, unaccompanied by any inflammatory symptoms, and supervening generally upon an atonic condition of the vascular tissues. It may be divided into three genera, viz. *Purpura, Ecchymosis*, and *Petechiæ*, which are distinguished rather by the causes which produce them, than by any real difference in their physical condition.]

PURPURA.

837. [This disease has received various names; such as Petechiæ sine febre, hæmorrhœa petechialis: it consists essentially of an extravasation of blood from the

capillary vessels beneath the cuticle, or into the substance of the proper tegumentary membrane (external or internal.) When the extravasation takes place into the external tegument or skin, it appears in the form of minute specks (petechiæ), or vibices; when in the mucous texture, the gums and other parts become soft and spongy, and an oozing of blood to a greater or less extent supervenes. In some cases the constitutional disturbance is very slight, the patient merely complaining of languor, diminution of muscular power, with occasionally slight pains in the limbs. The petechiæ are very small, and not unlike flea-bites, but readily distinguishable from them by being of a more livid colour, and also in the centre of flea-bites there is always observable a minute puncture: to this form the term *purpura simplex* is applied. We find another set of cases marked not only by petechiæ, but also by ecchymoses and vibices of various sizes, resembling those caused by bruises, or by the stroke of a whip. The extravasations, whatever be their extent, are of a bright red colour on their first appearance, but soon become dark or livid, and again, as the process of absorption takes place, they present successively the shades of brown and yellow, just as we observe in ordinary cases of superficial effusions of blood. If new effusions take place whilst these changes are going on, we may find in the same part and at the same moment spots of almost every variety of colour. The spots at the inside of the cheeks, lips, and palate, sometimes become raised into dark vesicles, which burst, and discharge the effused blood. Such cases as these are included under the term *purpura hæmorrhagica*. The external characters of this complaint have engrossed too exclusively the attention of observers, though they are of comparatively little moment, and form no adequate basis either of diagnosis or practice, so long as the nature of the constitutional disturbance is overlooked. Bateman says that "in many cases no febrile appearances have been noticed;" that "it not unfrequently

appears suddenly in the midst of apparent good health;" that "it is often preceded for weeks by great lassitude, faintness, and pains in the limbs, and is always accompanied by extreme debility and depression of spirits." Again, "the pulse is commonly feeble, and sometimes quickened, and that heat, flushing, perspiration, and other symptoms of febrile excitation, recurring like paroxysms of hectic, occasionally attend..... In some patients, deep-seated pains have been felt about the præcordia, and in the chest, loins, or abdomen; in others cough, or tension and tenderness of the epigastrium and hypochondrium, with irregular or constipated bowels: in a few, frequent syncope has occurred." From such an enumeration of the casual symptoms of the disease little or no information can be gleaned as to its pathology or treatment: there is, however, apparent throughout a leaning to the opinion that it is a disease of debility, which was decidedly asserted by Dr. Willan, who described it as "an efflorescence consisting of small distinct purple specks and patches, attended with general debility, but not always with fever."

838. When we consider the local phenomena of purpura, we can scarcely refrain from admitting that it should be classed, not amongst diseases of the skin, but rather amongst those of the circulating system, inasmuch as in bad cases the extravasation is not confined to the external tegument, but "issues also from the lungs, bowels, uterus, urethra, and bladder." Now, extravasations of blood arise when the balance naturally existing between the action of the heart and the power of the capillary vessels is overturned: and this may occur in either of two ways: the heart's action may be increased to such a degree as to produce an effusion in some part or organ, though the capillaries retain their natural power; or, the maintaining power of the capillaries may be so altered as to admit of the extravasation, though the heart's propulsion remains natural. On this fact is founded the distinction of hæmorrhages into active

and passive,—a distinction which, when clearly established, is of the utmost importance in a practical point of view. In purpura, an attention to the previous circumstances of the patient will contribute to determine whether the case belongs to one or other of the classes here indicated. If a person enjoying good health, and living on wholesome food in a pure atmosphere, be suddenly seized with petechial extravasations, we cannot hesitate on deciding that debility is not the cause, and therefore, that tonics and stimulants are contra-indicated. But should such an accident happen to an individual exposed to various depressing causes, such as impure air, bad food, fatigue, &c. the mere knowledge of the fact furnishes a clue to the management. In another place, when remarking on the pulse as a means of diagnosis, I have urged the necessity of attending to the action of the heart as well as to that of the arteries, when we seek to deduce an inference from the state of the circulating system. If we recur to the jumble of symptoms above set down from Bateman, we shall find some, such as oppression and pain at the præcordia, which indicate a fulness about the heart, and what has been termed a labouring or oppressed state of the circulation—a condition which can generally be relieved by moderate depletion, with other means for equalizing the circulation. In such cases I think it will generally be found that though the pulse may be small, and even weak, yet the heart's action is strong and firm in its character, which is of itself a sufficient warranty of the safety of the practice when conducted with caution. If, on the other hand, the stroke of the heart against the ribs be feeble and undecided, so as to give an impression as if it were flaccid, other symptoms of debility at the same time existing, any curative plan, including depletion amongst its measures, would, I believe, be treated by most men as absurd. There are cases, however, of petechial extravasations occurring in persons exposed to debilitating causes, and presenting its usual indications, in which small quantities of blood

may be abstracted with good effect by cupping over the region of the heart, provided a general tonic, but not stimulant plan, be at the same time acted on: the cases to which I allude are those in which the petechiæ or ecchymoses may be traced to some moral impression as the immediate cause, the system having been predisposed by having suffered from other depressing agencies. I have above alluded to the loss of balance between the action of the heart and that of the capillaries as the precursor to petechiæ; here the loss of balance takes place between the propelling power (the heart) and the thing to be propelled (the blood), the latter remaining unchanged, the former being diminished,—a condition which can be remedied by cautiously lessening the quantity of blood, especial care being taken to watch the influence which such a measure produces on the action and rhythm of the heart.

A question may here be raised which is confessedly difficult to be solved, but yet important and interesting:—Does purpura arise in all cases from an alteration in the solids, or are there any which proceed from an alteration in the fluids? Solidism, commencing with Hoffman, gradually extended until by the influence of Cullen and Brown, and their respective adherents, both at home and abroad, it took possession of men's minds so exclusively that little or no attention has for a great length of time been paid to the changes which the fluid parts of the body suffer during disease. It became even usual amongst lecturers to hold up to ridicule what they were pleased to designate as "the dreams of the humoral pathologists." It may be contended that as the secreted fluids are altered by deranged action in their secerning organs, so the circulating mass is altered only by the influence of the vessels which propel it. But this is by no means conclusive. Suppose a number of persons are constrained to live on unwholesome food, such as salt fish, or half putrid flesh, the digestive powers will not be able fully to correct its bad qualities, and so an ill assimilated chyle is

introduced into the system, which, after a while, begins to exert its influence. Prostration and debility soon set in, with various derangements of the digestive and other organs, or perhaps scurvy, irritative fever, and œdema of the extremities. Where is the point of departure of these derangements? is it in the solids or fluids? Does it not commence in the first animalized fluid—the chyle, and is it not thence propagated to all the others? We may add another question, and inquire, are not these circumstances pretty nearly analogous to those admitted to precede the occurrence of petechial extravasations in many cases?

Dr. Bateman notices two varieties of this affection; viz. *purpura contagiosa*, which includes those cases of typhoïd fevers that are attended by petechiæ, and *purpura urticans*, which commences in the form of round and red elevations of the cuticle, but is not attended by any sensation of tingling or itching like the wheals in urticaria. This surely is a strange derivative; it has, however, a parallel in "*lucus a non lucendo.*"]

ECCHYMOSIS

839. [Is applied to a spot of a red, black, blue, or green colour, the tinge of which is gradually lost at the circumference, occasioned by a blow, sprain, strangulation, or any other cause which may produce rupture of the capillaries.]

PETECHIÆ

840. [Are minute spots or ecchymoses consequent on the debilitated condition of the capillaries at the termination of fevers of the typhoid character.]

IV.

ALTERATIONS OR DEFECTS IN THE COLOUR, CONFORMATION, OR TEXTURE OF THE SKIN.

EPHELIS

841. [Is nothing more than the tanned or bronzed condition of the skin, produced by exposure to the sun.]

LENTIGO.

842. [A name applied to those small yellowish brown spots, known by the name of freckles, and generally produced, without any well-marked cause, on the skins or persons of fair complexion.]

NÆVUS.

843. The various congenital excrescences and discolorations of the skin, to which the appellations of nævus, spilus, moles, &c. have been applied, may be conveniently treated of together. They exhibit many peculiarities of form, magnitude, colour, and structure, and are seen on almost every part of the surface of the body in different instances. Some of them are merely superficial, or stain-like spots, and appear to consist of a partial thickening of the rete mucosum, sometimes of a yellow or yellowish brown, sometimes of a bluish, livid, or nearly black colour. To these the term spilus has been more particularly appropriated. Others, again, exhibit various degrees of thickening, elevation, and altered structure of the skin itself; and consist of enlarged and contorted veins, freely anastomosing, and forming little sacs of blood. These are sometimes spread more or less extensively over the surface, occasionally covering even the whole of an extremity, or one half of the trunk of the body; and sometimes they are elevated into prominences of various form and magnitude. Occasionally these marks are nearly of the usual colour of the skin; but most commonly they are of a purplish red colour, of varying degrees of intensity, such as the presence of a considerable collection of blood-vessels, situated near the surface, and covered with a thin cuticle, naturally occasions.

The origin which was anciently assigned to these marks by physicians, and to which they are still ascribed by the vulgar, (viz. the influence of the imagination of the mother upon the child *in utero*,) has occasioned their varieties to be compared with the different objects of desire or aversion which were supposed to operate

on the passions of the mother; whence the following nævi have been described:—The flat and purple stains were considered as the representatives of claret, or of port wine; and sometimes of a slice of bacon, or other flesh. Sometimes the stains are regularly formed, like a leaf, with a very red border, and lines, like veins, across from a central rib, forming the nævus foliaceus; and sometimes a small red centre with branching lines, like legs, has suggested the idea of a spider, or N. araneus. But those nævi which are prominent have most commonly been compared to different species of fruit, especially to cherries, currants, and grapes, when the surface is smooth and polished; or to mulberries, raspberries, and strawberries, when the surface is granulated; whence the nævus cerasus, ribes, morus, rubus, fragarius, &c.

Some of these excrescences are raised upon a neck or pedicle; while some are sessile upon a broad base. Some of them again, although vivid for some time after birth, gradually fade and disappear; some remain stationary through life, but commonly vary in intensity of colour at different seasons, and under circumstances easily explained; and others begin to grow and extend sometimes immediately after birth, and sometimes from incidental causes at a subsequent period, and from small beginnings become large and formidable bloody tumours, readily bursting, and pouring out impetuous and alarming hæmorrhages, which, if they do not prove suddenly fatal, materially injure the health by the frequent depletion of the system. Sometimes, however, after having increased to a certain degree, they cease to enlarge, and thenceforth continue stationary, or gradually diminish, till scarcely any vestige remains.

In some instances, however, these preternatural enlargements and anastomoses, which constitute the nævi, are not merely cutaneous. A similar morbid structure may take place in other parts; it sometimes occupies the whole substance of the cheek, according to Mr. Abernethy, and has occurred in the orbit of the eye;

and Mr. John Bell affirms that it affects indifferently all parts of the body, even the viscera.

The origin of these connate deformities is equally inexplicable with that of other anomalous and monstrous productions of nature; but it would be insulting the understanding of the reader to waste one word in refutation of the vulgar hypothesis, which ascribes them to the mental emotions of the mother—an hypothesis totally irreconcileable with the established principles of physiology, and with the demonstrable nature of the connexion between the fœtus and the parent, as well as with all sober observation.

It is important, however, to know, that very slight causes of irritation, such as a trifling bruise, or a tight hat, will sometimes excite a mere stain-like speck, or a minute livid tubercle, into that diseased action which occasions its growth. This growth is carried on by a kind of inflammatory action of the surrounding arteries; and the varying intensity of colour arises from the different degrees of activity in the circulation. Thus these marks are of a more vivid red in the spring and summer, not in sympathy with the ripening fruit, but from the more copious determination of blood to the skin, in consequence of the increase of the atmospheric temperature. The same increased determination to the surface is also produced temporarily, and with it a temporary augmentation of the florid colour of the nævi, by other causes of excitement to the circulation; as by active exercise, by heated rooms, or the warmth of the bed, by drinking strong liquors, or high feeding, by emotions of the mind, and in women by the erethism of menstruation.

These considerations will serve to suggest the proper means of treating the nævi and spili, where any treatment is advisable. When they are merely superficial, without elevation, which would render them liable to accidental rupture, and without any tendency to enlarge and spread, there appears to be no good reason for interfering with them. The applications mentioned by

the older writers were doubtless as futile as they were disgusting; such as saliva, the meconium of infants, the lochial blood of women, the hand of a corpse, &c.; and the severe resource of the knife, even if the deformity of a scar were much less than that of the original mark, is scarcely to be recommended.

But when the nævi evince a tendency to enlarge, or are very prominent excrescences, and either troublesome from their situation, or liable to be ruptured, some active treatment will then be required. Either their growth must be suppressed by sedative applications, or the whole morbid congeries of vessels must be extirpated by the knife.

All strong stimulants externally must be avoided, as they are liable to produce severe inflammation, and even constitutional disorder.

The consideration of the mode in which these vascular excrescences grow, by a degree of inflammatory action in the surrounding vessels, suggested to Mr. Abernethy the propriety of maintaining a constant sedative influence upon those vessels, by the steady application of cold, by means of folded linen kept constantly wet. This practice has succeeded, in several instances, in repressing the growth of these unnatural structures, which have afterwards shrunk, and disappeared, or ceased to be objects of any importance. Pressure may, in some instances, be combined with this sedative application, and contribute to diminish the dilatation of the vessels; but in the majority of cases pressure is the source of great irritation to these maculæ, and cannot be employed. The temporary enlargement of these prominent nævi by every species of general excitement would teach us to enjoin moderation in diet, exercise, &c. during the attempts to subdue them.

The mode of extirpation is within the province of the surgeon; and the proper choice of the mode, under the different circumstances, is directed in surgical books. From the days of Fabricus Hildanus, the propriety of

radically removing every part of the diseased tissue of vessels has been inculcated; but Mr. John Bell has most satisfactorily stated the grounds of that precept, by explaining the structure of these excrescences, as well as the source of the failure and danger, when they are only cut into, or opened by caustic. I shall therefore refer the reader to his "Discourse," already quoted.

The varieties of spilus, or mere thickening and discoloration of the rete mucosum, are sometimes removeable by stimulant and restringent applications. A combination of lime and soap is extolled by several writers; and lotions of strong spirit, with the liquor potassæ, as recommended for the treatment of the ephelides and of pityriasis, certainly sometimes remove these maculæ.

With respect to those brown maculæ, commonly called moles, I have little to observe; for no advantage is obtained by any kind of treatment. It is scarcely safe, indeed, to interfere with them; for when suppuration is induced in them, it is always tedious and painful, the matter emitting at the commencement an extremely fœtid odour. When moles are irritated by accident, or rudely treated, so as to produce excoriation, they are liable, it is said, to become gangrenous, and thus to produce sudden fatality.

Moles are not always congenital. I lately saw an instance in a lady of remarkably fair and delicate skin, where a numerous crop of small moles appeared, in slow succession, upon the arms and neck. Congenital moles, indeed, are not always stationary; but they sometimes enlarge gradually for a time, and afterwards disappear.

MOLLUSCUM.

344. [This affection is marked by the appearance of tubercles of slow growth, and little sensibility, varying in size from that of a pea to a pigeon's egg. If there are several, perhaps the size never exceeds this; but if there should be only one or two, they may increase so as to equal that of the head, or become much larger.

When small, they contain an atheromatous matter, and are either globular and sessile, or pyramidal, and supported by a narrow neck, and so become pendulous. When large and single, the tumour is generally pyramidal, or, at all events, adherent by a narrow neck, and its interior composed of an organized, soft, and fatty mass. When such tumors (the large and single ones) are unconnected with constitutional disturbance, and shew no disposition to inflammation or ulceration, which is almost always the case, their removal by excision is easy and safe.]

VERRUCÆ.

845. [Common warts are generally found on the hands: by cutting them vertically, the epidermis is seen to be thickened in the centre. "The thickened chorion receives into its substance prolongations called the roots of the wart." They are generally observed in persons whose hands are exposed to the effects of climate or hard labour, and who are not particular as to cleanliness. Jenner believed them to be more frequent in persons who were occupied in the care of cows.]

ICHTHYOSIS.

846. [The ichthyosis or fish-skin disease, is characterized by a thickened, hard, rough, and in some cases almost horny texture of the integuments of the body, with some tendency to scaliness, but without the deciduous exfoliations, the distinct and partial patches, or the constitutional disorder, which belong to lepra and psoriasis.

Ichthyosis simplex.—In its commencement this disease exhibits merely a thickened, harsh, and discoloured state of the cuticle, which appears, at a little distance, as if it were soiled with mud. When further advanced, the thickness, hardness, and roughness, become much greater, and of a warty character, and the colour is nearly black. The roughness, which is so great as to give a sensation to the finger passing over it, like the

surface of a file, or the roughest shagreen, is occasioned by innumerable rugged lines and points, into which the surface is divided. These hard prominences, being apparently elevations of the common lozenges of the cuticle, necessarily differ in their form and arrangement in different parts of the body, according to the variations of the cuticular lines, as well as in different stages and cases of the complaint. Some of them appear to be of uniform thickness from their roots upwards; while others have a short narrow neck, and broad irregular tops. The former occur where the skin, when healthy, is soft and thin; the latter, where it is coarser, as about the olecranon and patella, and thence along the outside of the arms and thighs. On some parts of the extremities, however, especially about the ankles, and sometimes on the trunk of the body, these excrescences are scaly, flat, and large, and occasionally imbricated, like the scales of carp. In other cases they have appeared separate, being intersected by whitish furrows.

This unsightly disease appears in large continuous patches, which sometimes cover the greater part of the body, except the flexures of the joints, the inner and upper part of the thighs, and the furrow along the spine. The face is seldom severely affected; but in one case, in a young lady, the face was the exclusive seat of the disorder, a large patch covering each cheek, and communicating across the nose. The mammæ, in females, are sometimes encased in this rugged cuticle. The whole skin, indeed, is in an extremely dry and unperspirable condition, and in the palms of the hand and soles of the feet it is much thickened and brittle. The disease often commences in childhood, and even in early infancy.

This affection has been found to be very little under the control of medicine. Stimulating ointments and plaisters have been industriously applied, with no material effect; and the disorder has been known to continue for several years with occasional variations.

Dr. Willan trusted to the following palliation by external management:—"When a portion of the hard scaly coating is removed," he says "it is not soon produced again. The easiest mode of removing the scales is to pick them off carefully with the nails from any part of the body, while it is immersed in hot water. The layer of cuticle which remains after this operation is harsh and dry; and the skin did not, in the cases I have noted, recover its usual texture and softness; but the formation of the scales was prevented by a frequent use of the warm bath, with moderate friction."

I have known the skin cleared of this harsh eruption by bathing in the sulphureous waters, and rubbing it with a flannel or rough cloth, after it had been softened by the bath; but the cuticle underneath did not recover its usual condition; it remained bright and shining; and the eruption recurred. Internally the use of pitch has, in some instances, proved beneficial, having occasioned the rough cuticle to crack and fall off, and leave a sound soft skin underneath. This medicine, made into pills with flour, or any farinaceous powder, may be taken to a great extent, not only without injury, but with advantage to the general health; and affords one of the most effectual means of controlling the languid circulation, and the inert and arid condition of the skin. Upon the same principle, the arsenical solution has been employed in ichthyosis. In one case, in a little girl affected with a moderate degree of the disease on the scalp, shoulders, and arms, this medicine produced a complete change of the condition of the cuticle, which acquired its natural texture; but, in two others, no benefit was derived from it. The decoction of the inner bark of the elm has been said to be a specific for ichthyosis, by Plenck; but this originated in a misconception as to the use of the term.]

CLAVUS.

847. [That hardened condition of the epidermis of the toes, familiarly known by the term corn. It con-

sists of several layers of thickened epidermis, so dense as to assume the appearance of horn. In the centre there is a point, whiter and deeper than the rest, forming a core, which on being pressed on the soft texture beneath, occasions considerable pain. Sometimes there is an effusion of blood around the body of the corn beneath the epidermis, constituting ecchymosis.

DISEASES OF THE APPENDAGES OF THE SKIN.

ONYCHIA.

848. [This is a term given to inflammation of the soft vascular texture forming the root of the nail; it sometimes supervenes on cutaneous phlegmasiæ, or various local injuries, as contusions, punctures, &c.: suppuration generally takes place; and the loss of the nail is to be expected. Sometimes the nail, from malformation, or pressure of a tight shoe, will be directed in its growth so that its sharp edge shall press upon part of the vascular pulp, producing considerable inflammation; ulceration takes place, and a fungous growth springs up which yields a sanious and fœtid purulent matter: if allowed to proceed further abundant vegetations take place, and the inflammation may extend to the periosteum.

Onychia maligna is a disease which has been described by Mr. Wardrop, in which the inflammation, which most frequently affects the great toe and thumb, causes tumefaction, and a redness at the root of the nail. "The kind of decussation formed by the skin at the anterior concavity (of the nails) soon turns into a purplish red swelling, more elevated and highly sensible at the points where the nail seems most adherent, and this is not long in being surmounted by bloody mamellated ulcerations"; a discharge of greenish and sanious pus exudes from between the root of the nail and skin, the nail thickens, becomes black, detached from its root, and ultimately falls off, leaving an inflamed, ulcerated, and

bleeding surface. "Commonly large horny productions soon replace the fallen nail. There are observed on the matrix small yellowish lamellæ, at first rather soft, which may at times be mistaken for inspissated pus; they are of a brownish or greenish colour, generally grow obliquely, but sometimes perpendicularly, from the centre or angles of the matrix. Two or three horny laminæ are at first perceived, but often unite, forming one, more or less irregular. These productions sometimes appear to keep up the inflammation, and the finger, as Wardrop has remarked, assumes the form of a spatula." The inflammation generally spreads to the lymphatics or arms, which is indicated by red streaks on the affected limb. Besides these varieties, chronic inflammation of the matrix may supervene on various inflammatory affections of the skin, which may end in denudation of the nail: sometimes supernumerary nails, and enlargement of the nail, may be the sources of various kinds of painful and distressing disease.]

PLICA.

849. [A chronic inflammation of the bulbs of the hair, not unfrequently attended with chronic onychia, and preceded by some kind of fever. The bulbs of the hair are tumefied, painful, and exude an agglutinating fluid which mats the hair. This disease is common in Poland; hence the term *Plica Polonica*. We are, however, in need of information concerning the pathology of this disease.]

CANITIES.

850. [Whitening of the hair is commonly the effect of age, and is first observed at the terminal points of the hairs. It is usually followed by baldness. It may occur with greater or less rapidity; generally, at first partial, but ultimately universal. It sometimes also occurs in young persons; and some most remarkable and well-authenticated cases are recorded of sudden discoloration of the hair.]

ALOPECIA, OR BALDNESS.

851. [This, like canities, is generally the result of age, but sometimes it occurs in young persons, particularly after recovery from fevers, when it is said to be attended with erythema or pityriasis. The *porrigo decalvans* of Bateman is said by Rayer to be a variety of alopecia: no doubt it causes a falling off of the hair, but it is evident that there is some more active disease present; and although it may not, strictly speaking, deserve a place in the genus Porrigo, it may be as well to let it remain there till we know more about its history.]

FEVERS.

These affections form a large and most important class. They are the *Pyrexiæ* of Cullen (πυρεξια, from πυρ, fire, and εχω, to have). The Latin word *febris*, whence fever comes, is derived from "*fervere*," to glow.

852. [Fevers, or pyrexiæ," says Cullen, "after beginning with some degree of cold shivering, shew some increase of heat, and an increased frequency of pulse, with the interruption and disorder of several functions, particularly some diminution of strength in the animal functions." Under this head are included— fevers, inflammation, eruptions, hæmorrhages, and fluxes.

Fevers, division of.—Fevers, properly so called, have been ranged by the same authority under three heads; viz. continued, intermittent, and remittent. Dr. Geo. Gregory divides them into continued, intermittent, and exanthematic, each admitting of certain varieties, as follow:—

Continued fevers—

Simple,
Complicated,
Typhus.

Periodical.—

Intermittent,
Remittent,
and other varieties.

EXANTHEMATIC—

Variola,
Rubeola,
Scarlatina.

The genera recognized by Cullen, and thus described in his Nosology, are, Synocha, Synochus, and Typhus.

"*Synocha.*—Calor plurimum auctus; pulsus frequens, validus, et durus; urina rubra, sensorii functiones parum turbatæ.

"*Synochus.*—Morbus contagiosus, febris ex synocha et typho composita, initio synocha, progressu et versus finem typhus.

"*Typhus.*—Morbus contagiosus; calor parum auctus; pulsus parvus, debilis, plerumque frequens; urina parum mutata; sensorii functiones plurimum turbatæ vires multum imminutæ."

INFLAMMATORY FEVER.

853. [This is the synocha of Cullen, (συνεχω, to continue,) a term strongly objected to by Dr. Good, as having no clear or correct etymological meaning; and also because it approaches so near to synochus, which is applied to a disease widely different, as to cause not a little confusion in the minds of the younger students.

Various degrees of febrile action are constantly seen to accompany the different inflammations (phlegmasiæ) of which they are symptomatic; whilst in synocha the mode of diseased action is said to be idiopathic, as if it arose from a general cause, and did not depend upon a local inflammation. But whether such a state of general excitement can exist without any local derangement, is a question upon which not a little difference of opinion exists.]

854. The inflammatory fever seldom occurs in a well-marked form in this climate, though it is frequent in the south of Europe. It is so violent in its attack, and rapid in its progress, that it may prove fatal in twenty-four hours, if not arrested by the most decisive means. It

comes on very suddenly, and is marked by great prostration of strength, with shivering, which is easily superseded by heat of skin, headache, and giddiness; the eyes are suffused, and the countenance flushed; the temporal arteries beat violently; the pulse is strong, full, and regular, from 110 to 120. The respiration is quickened; delirium occasionally occurs.]

855. [True inflammatory fever is generally arrested by active treatment, if taken at its commencement. It may cease on the fifth day, with a critical perspiration, or copious discharge from the bowels. It usually subsides on the eleventh day. During its progress there is generally a greater degree of determination of blood to, or of increased action in, some organs than in others: hence it presents some leading varieties. In some cases the head is principally affected; in others, the liver and alimentary canal, or perhaps the lungs and pleura. It generally arises in full plethoric persons, and follows checked perspiration, or some habitual discharge, such as hæmorrhoids; violent efforts, or exposure to heat.]

SIMPLE CONTINUED FEVER.

856. [The variable character of this form of fever is well expressed in Cullen's short definition. At the commencement there may be every indication of power and strength in the system, as if it were distinctly inflammatory in its character, (*mitio synocha*) but in its progress it may suddenly change, so that its characters become those of debility and oppression of the vital powers, (progressu et versus finem typhus.)

857. [The continued fever of mild climates, the synochus, is usually preceded, perhaps for some days, by a sense of weariness in the limbs, pain in the loins, and some degree of general weakness, loss of appetite, and bitter taste in the mouth. In many cases there is headache, varying in degree and extent, being sometimes con-

fined to the forehead or temples, at others diffused more generally. These may be considered as precursors. Persons in this condition often go about their usual avocations for some days, perhaps a week, or even more. After a variable interval a sense of cold is perceived, usually at the back, from whence it extends, and becomes general, so as to produce what is termed a rigor. This state is soon followed by heat more or less generally diffused, with perhaps some partial perspiration; the patients then become depressed and weak, and feel the necessity of applying for advice, and in this condition we most commonly find them, either in private or in public institutions. When questioned as to their feelings and present condition, these persons usually complain of slight pains in the limbs, loss of strength, and despondency; sometimes they are a little excited, and complain of head-ache. The countenance varies much in its expression; it may be flushed, and the eyes suffused, or, on the contrary, pale, with an expression of languor. There is usually want of appetite, with thirst, and disagreeable taste in the mouth. The tongue may be covered with a white or yellowish coating, but at the same time moist, or it may be red at its point and borders, its middle being coated as just stated: the papillæ are not unfrequently red and prominent. The bowels are usually constipated, unless medicine has been taken, which is most commonly the case; and if pressure be made at the epigastrium and right ilium, it will, in most cases, cause some degree of pain.

858. These are the ordinary symptoms of what is usually called simple continued fever in its early stage. Its duration varies from nine to seventeen or twenty days; it requires in general little else than a cooling regimen, and antiphlogistic practice, regulated by a consideration of the age and condition of each individual case. But especial care should be taken to watch any complications that may arise, and treat them according

to their kind and degree. These generally consist of irritation or inflammation in the intestinal canal, particularly at the lower part of the ilium, or of the lungs, or of determination to the brain and its membranes. It cannot be necessary to enumerate in this place the symptoms of these affections, as they will be found fully stated under their respective heads.]

When febrile action is induced, the functions of one or more organs are disturbed in a greater or less degree. But even when there is increased action and sthenic state of the system, there is something which distinguishes this from true inflammation, and shows that although the antiphlogistic plan of treatment is to be adopted, it cannot be pushed to the same length as in the latter state. In fevers there is evidently an excited or altered mode of action set up in the vascular, the nervous, the digestive, and secreting symptoms: of these, two or more are affected in various degrees, and the danger is proportioned to the extent and severity of these complications. In some cases the gastro-intestinal mucous membrane is principally affected; in others the brain; in some the lungs.

The frequent and formidable diseases on the investigation of which we are entering (observes Dr. Southwood Smith, in his Treatise on Fever, p. 33,) cannot be understood until clear and exact answers are obtained to the following inquiries:—1. What is the series of phenomena which constitutes fever? 2. What are the particular phenomena which are common to all its varieties and combinations? 3. What is the order in which these phenomena occur in the series? 4. What are the organs, and what their states, upon which these phenomena depend? 5. What are the external signs of these internal states, or what are the indications by which their existence may be known? 6. What is the external noxious agent or agents, or the exciting cause or causes of the disease? 7. What is the particular remedy, or the particular combination of remedies,

which is best adapted to each state of each organ?

The phenomena which, when taken together, constitute fever, are numerous, and possess various degrees of importance: to ascertain exactly which of these are to be considered primary and which secondary, which commenced first and which second, or subsequently, is the first object of inquiry. They all arise from some new state of the organs, and it is by tracing out the order of their occurrence that we are enabled to ascertain which organ is first affected, or in other words, which is the point of departure from the healthy condition.

859. The order of events in fevers, according to Dr. S. Smith, is, first, derangement in the nervous and sensorial functions,—this is the invariable antecedent: secondly, derangement in the circulating function,—this is the invariable sequent; and thirdly, derangement in the secreting and excreting functions,—which is the last result in the secession of morbid changes.

Now if this order of events be contrasted with that which obtains in inflammation, we shall be enabled to draw a sufficient line of distinction between the febrile and the inflammatory state. In pneumonia, in enteritis, in hepatitis, the spinal cord and the brain are never the organs in which the first indications of disease appear: the earliest indications of the disease that can be discovered have their seat in the affected organ itself. It is only after the disease has made some progress that other organs and functions are involved; and apparently the last to be involved, and that suffers least injury, is the nervous system. It is probable, however, that the difference does not consist merely in the order of events: there is something in the mode and kind of disordered action which takes place in fever, as contrasted with inflammation, but it is difficult, if not impossible, to indicate this, or say in what it consists.

It is from an attentive investigation of the order of events, as they occur in fever, that Dr. Smith infers the nervous system to be that which is first affected. In the mild form of continued fever (synochus mitior) the first symptom that occurs is a diminution or loss of mental energy; yet this is ordinarily overlooked until something more urgent takes place. There is an indistinctness and confusion in the trains of ideas, and though the individual may not be altogether incapable of thinking clearly, he feels that the effort to do so is disagreeable or even painful. The natural attendant upon this want of sensorial energy is a loss of muscular energy, indicated by lassitude—a feeling of weariness. This uncomfortable condition may be briefly called febrile uneasiness. The countenance indicates anxiety or dejection, and there is a general feeling of chilliness. All these are clearly referable to the derangement of the function of the spinal cord and brain. There is as yet no affection of any other organ obviously or at least much developed. The circulating system, it is true, is just beginning to be affected: the pulse is no longer perfectly natural: it is more languid than in the state of health; sometimes it is also quicker, at other times it is slower: now and then it is scarcely changed in frequency, but its action is invariably weaker than in its sound state. As to the respiration, the chest does not expand so freely, and compensation seems to be sought in an additional number of respirations, though this is often not perceived unless the patient makes an effort. Disturbance thus established in the nervous system, the circulating and respiratory functions, some degree of derangement soon takes place in the secreting and excreting actions. The mouth is dry, the tongue coated; the excretions are unhealthy; the urine altered in character; the skin dry and hot. By this series and assemblage of events the existence of continued fever is sufficiently indicated. In mild cases it ceases towards the fifteenth day, leaving the patient weak and consi-

derably reduced. But though mild in its commencement the disease may assume an aggravated form, when one or more of the organs becomes the subject of decided congestion or of inflammation. Hence, according to the seat of these complications, the existence, and nature, and degree of which are so extremely important in a practical point of view, we have groups formed consisting of head cases, chest cases, and abdominal cases; to illustrate the case and character of which I shall select an instance from Dr. Smith.

Case of Continued Fever, with Cerebral Disease. (See *Dr. S. Smith on Fever*, p. 198.)—Edward Forrester, ætat. forty-six, cabinet-maker, admitted on the sixth day of fever. Complaint commenced with severe pain of back, loins, and epigastrium, with sense of ardent heat. At present, pain of head slight: that of epigastrium continues; tongue white, moist; no uneasiness of chest; pulse 90.

7th.—Pain of head, limbs, and epigastrium; tongue white, dry; pulse 96, full and strong; V. S. ad ℥xij.

8th.—Pain of head gone; that of epigastrium diminished; pulse 110; blood not sizy.

10th.—Pain of head returned; that of epigastrium diminished; no sleep; delirium; pulse 126.

12th.—Pain of head again gone; delirium continues; pulse 110.

13th.—No sleep; mind confused; delirium; subsultus tendinum.

15th.—Cerebral symptoms undiminished; tongue dry, and quite black; lips and teeth covered with black sordes.

19th.—Severity of symptoms had diminished; lips, teeth, and tongue, had begun to clean; pulse fallen to 96, but the parotid gland to-day painful, enlarged, and indurated.

20th.—Tumour of parotid increased; all the symptoms greatly aggravated; tongue not to be protruded.

22nd.—Insensibility amounting to coma.

27th.—Insensibility and prostration gradually increased. Died.

Head.—Arachnoid white and opaque, firmly adherent along the vertex to the dura mater; surface and substance of brain highly vascular; gelatinous effusion between the membranes.

Thorax.—Mucous membrane of bronchi vascular; [pleuræ adherent; lower lobe of left lung partly hepatized, and partly consisting of a mass of suppurating tubercles.]

Abdomen.—Small intestines of extremely dark colour; mucous membrane vascular.

TYPHUS FEVER.

859. The term *typhus*, so frequently employed by writers, is taken from a symptom that marks certain cases; viz. *stupor* (τυφος, stupor.) It is, in fact, but a continued fever complicated with determination of blood to the brain, and perhaps to some other important organ also; but several of its attendant circumstances appear to indicate some degree of alteration in the characters and properties of the blood. It sets in generally with the usual symptoms of excitement, but an opposite condition soon supervenes, when the countenance assumes a peculiar expression, on which some persons dwell as if it were pathognomonic of the disease; it is an expression of anxiety joined to a flushed appearance of the countenance. The pulse is small and weak, ranging from 115 to 130. The tongue is at first thickly coated, and soon becomes dry, parched, and loaded with a brownish crust; in some cases it is, on the contrary, smooth, and unnaturally red; a dark sordes collects round the teeth and the evacuations from the bowels are dark and fœtid. A low muttering delirium occurs at rather an early period; petechiæ and vibices not unfrequently appear; and if the disease goes on unchecked, the stools pass off involuntarily; tremors and subsultus tendinum arise; the pulso grows insen-

sible : biccough, coldness of the extremities, and clammy sweats, precede the fatal termination. The duration of the fever varies from a fortnight to three weeks, or perhaps more. This form of fever may arise in a particular individual from the ordinary exciting causes of fever, but it may be propagated from one to another by what is termed contagion.]

360. [The appearance of a person labouring under typhus is so different from that of a person affected with synochus, that no one ignorant of the disease, who saw these two patients for the first time, would believe that both were afflicted with one and the same malady ; and yet dissection after death demonstrates that the physical condition of the organs is precisely the same in both ; and careful examination of the symptoms during life shews that they are really identical, both in their nature and their succession, however, at first view, they may appear to differ. The difference between these two diseases arises entirely from a difference in intensity; still this difference produces a very important modification in the character of the disease ; important, because it materially affects both the safety of the patient, and the nature of the remedies that are best adapted to rescue him from his danger.

Typhus, like synochus, presents itself under two degrees of intensity, which, like those of the latter, may be designated by the terms mitior and gravior. All the important symptoms which belong to both are found in the same cavities. and relate to the same organs, as in synochus, and therefore must in like manner be divided into cerebral thoracic and abdominal. This form of fever, like synochus, presents two different degrees of intensity ; in some cases it is milder, in others more severe. In the enumeration of its symptoms we find them to differ only in degree from those of synochus ; the sensorial and muscular depression are greater, so is the degree of chilliness ; the eyes more dull and heavy ; the febrile uneasiness greater ; delirium and muscular

tremor are also greater and more usually present; the tongue becomes foul or coated on the first or second day, and is often dry as early as the fourth day.

Case of Typhus Mitior, with Cerebral Affection.—John Clark, æt. seventeen, admitted on the fourth day of fever. Attack commenced with ordinary symptoms, and was attended with severe pain of the head, which continues at present, and which is attended with a sense of weight; eyes injected and suffused; expression of countenance extremely dejected; sleeps none; skin pungently hot, especially over the scalp; pulse 108, of good power; tongue already brown and quite dry; some thirst; respiration hurried; some uneasiness of the chest on coughing; considerable tenderness of abdomen.

5th.—Eight ounces of blood which were drawn not sizy; crassamentum louse; pain of head not at all relieved; sense of weight distressing; no sleep; much restlessness; heat over the scalp pungent; pulse 104; tongue more dry; tenderness of abdomen the same; six stools.

6th.—Pain of head still severe; mind more confused; passed a more restless night; pulse 116.

10th.—Pain of head undiminished; eyes more suffused; extremely restless night, during which delirium came on; this morning muscular tremor has appeared; pulse 124.

12th.—Pain of head entirely gone; scarcely at all sensible; constant muttering delirium; muscular tremor, with subsultus tendinum; two stools passed in bed; pulse 124; abdomen still painful on firm pressure, and has become swollen and tense.

13th.—Insensibility and delirium increased; constant incoherent muttering; extreme prostration; erysipelas has appeared on the forehead, and is spreading to the scalp; pulse 128; two stools passed in bed.

14th.—Died.

Case of Continued Fever, with Thoracic Disease.—John Wotton, ætat forty-six, plaisterer, admitted on the 7th

day of fever. Attack commenced with chilliness, succeeded by cough and severe pain in the region of the heart; has had two similar attacks of pain, from which he soon recovered; at present he has so much pain in the side that he cannot take a full inspiration; frequent cough exciting pain; respiration short and painful; abdomen not tender; tongue white and moist; pain of head; little sleep; pulse 120, full and hard; skin hot.

8th.—Pain of chest diminished; can take full inspiration with less uneasiness; cough less frequent; respiration little changed; pulse 102, intermittent.

9th.—Respiration much more easy; cough less frequent, with copious mucous expectoration; pulse 108, intermittent.

10th.—Says he is quite free from pain every where; cough again increased; respirations 50; pulse 110, not intermittent; delirium.

11th.—Respirations 60; no sleep; great restlessness; pulse 108, intermittent.

14th.—Perfectly insensible; scarcely to be retained in bed; respiration extremely quick; pulse not to be counted. Died.

Thorax.—Mucous membrane of bronchi highly vascular; [left lung adherent to parietes of the chest by a layer of coagulable lymph, nearly an inch in thickness; substance of lung completely hepatized; pericardium exceedingly thickened throughout, and universally adherent to the heart; heart itself soft and flabby; inner coat of aorta of a reddish brown colour.]

Head.—Vessels of pia mater exceedingly turgid; effusion beneath it and the arachnoid; substance of brain very much softened.

Abdomen.—Mucous membrance of ilium vascular.

Case of Continued Fever, with Abdominal Disease.—Thomas Sexton, æt. 18, servant, admitted on third day of scarlet fever; complaint came on with nausea, vomiting, and pain of the limbs; at present throat sore; deglutition easy; chest free from pain; no cough; abdo-

men tender, especially in the region of the epigastrium; tongue white in middle, red around margin; no stool for several days, because, as he supposes, he has vomited all his medicine; pain of head; vertigo; face flushed; frequent attacks of epistaxis during his vomiting, always relieving the head-ache; pulse 102; skin warm; no eruption.

4th.—Pain of head gone; vertigo continues; eyes dull and heavy; face flushed; no vomiting; pulse 96.

5th.—Sense of vertigo lessened; tongue brown and dry; four stools; pulse 84.

7th.—Abdomen tender; tongue brown and dry; six stools; pain of head returned; much pain of back; no sleep; delirium.

11th.—Less sensible; drowsy delirium; three stools.

12th.—Insensibility increased; drowsiness, approaching to coma; cheeks dusky; tongue, with dark brown crust, dry; stools in bed; pulse 102, weak.

16th.—Abdomen tender; tongue not to be protruded; three stools, all in bed; pulse 130; extremely weak; great prostration.

17th.—Countenance sunk; respiration short and hurried; four stools; more prostrate.

18th.—No change, excepting that the prostration is still greater. Died.

Abdomen.—Mucous membrane of ilium and cœcum extremely vascular, and contained several small ulcers, some of which were merely the abraded points of enlarged mucous glands; other glands in the neighbourhood much enlarged, but not ulcerated; mesenteric gland very much enlarged; liver mottled.—*Head.* Arachnoid highly vascular; substance of brain natural; gelatinous effusion between the arachnoid and pia mater; half an ounce of serum at base.—*Thorax.* Viscera healthy.

CAUSES OF FEVER.

861. Systematic writers admit two sorts of causes; the one rendered in the system susceptible of the im-

pression from injurious agencies—in other words, they predispose to this mode of diseased action—whilst the others directly induce or excite it. Any circumstance or agency which depresses the power of the system may be considered a predisposing cause of fever: insufficient or improper food, exposure to fatigue, to wet and cold, excessive labour, and depressing passions, living in impure damp atmosphere. As to the immediate or exciting cause of fever, it is, according to Dr. Smith, a poison formed by the corruption or decomposition of organic matter: vegetable or animal matter, during the process of putrefaction, give off a principle, or give origin to a new compound, which, when applied to the human body, produces the phenomena constituting fever. Without doubt, adds Dr. Smith, (page 360,) a febrile poison, purely of animal origin in a high degree of concentration, would kill instantaneously, and when not intense enough to strike with instantaneous death, it would produce a continued fever, with typhoid characters in the greatest possible degree of completeness and perfection; and this appears to afford a true solution of the origin of plague. The discussion of a question so complex as that of infection and contagion would be altogether beside our present purpose.

A question of much interest, but one not of easy solution, here presents itself, viz., on what part or system of organs does the exciting cause of fever exert its influence in the first instance? or is it upon the solids or fluids? It will be seen by the extracts from Dr. Smith's work that the nervous system is that which gives the earliest evidence of disturbed action. Now, if it be asked through what inlet does the injurious influence reach the nervous system, it must be at once replied that it enters through the lungs, being taken in by respiration, and that it acts on the terminations of the nerves, and by them its influence reaches the brain, as certain poisons do, which produce their effects by acting upon the remote terminations of nerves. It is somewhat in this way that the solidists would reason

upon the phenomena observed; but others take a different view of the matter, and, admitting all the facts and phenomena to be as above stated concerning the symptoms and progress of fever, still consider that the injurious influence is, in the first instance, brought to bear upon the fluids, and through these upon the solids, the nervous system feeling it first. Many circumstances tend to shew the circulating fluids suffer changes of disease as well as the solids: for instance, that alterations in the blood, form, in numerous instances, the immediate cause of hæmorrhagic effusions. The experiments made by Foderé on exhalation prove very satisfactorily that a change in the viscidity of the blood, and in the cohesion of its particles, facilitates the transudation of that fluid through the coats of the vessels. An altered condition of the blood has at all times been observed in scurvy and malignant fevers, and most probably obtains to a greater or less extent in the majority (if not in all) of contagious diseases. Magendie's experiments lead directly to this conclusion. If a few drops of water, which had stood over substances in a state of putrefaction, be introduced into the jugular vein of a dog, the animal soon becomes dejected, and assumes the recumbent posture; ardent fever sets in, with vomiting of dark fœtid matter, the alvine evacuations being of the same character; the blood loses its power of coagulation, and becomes effused into several of the tissues; death supervenes in a short time. These phenomena may fairly be said to arise from an alteration, not only in the chemical composition of the blood, but also in its vital properties, and bear a very close resemblance to those which obtain in aggravated forms of fever. Many observations, besides those of Andral above referred to, may be cited to shew that, during the progress of fevers, an exhalation of fluids generally takes place into the intestines, together with the usual secretions, which are much altered in quality. I have found the bile so acrid as to irritate the skin on the back of the hands and fingers. If these fluids re-

main for a short time, so that part becomes absorbed, and carried into the general circulation, must not such a mixture (even supposing the blood to have been previously in its physiological condition,) cause serious disturbance in the system? May we not trace to such an agency some of the aggravated symptoms which arise towards the latter stages of fevers? It is an established law of the economy, that no organ continues to act without receiving arterial blood. From this it follows that all the functions are immediately dependent on the circulation; but this, in its turn, depends on respiration, which, in a manner, elaborates arterial blood; and also on innervation, which modifies and controls both. Now, if the suspension of the supply of *arterial* blood determines the cessation of one or more important functions, and so causes death, a diminution in the *quantity* of the supply will cause weakness merely: but a change in its *quality* cannot fail to induce a derangement of the functions of organs, varying in extent according to the degree of the change. Such a change may arise, as has been already shewn, from the introduction into the system of an impure chyle derived from unwholesome food; and is very likely to arise during fever, from the absorption of vitiated secretions poured into the alimentary canal. But it may be replied, that though such an occurrence may take place, and materially aggravate the disease, still there is no evidence of any such vitiation co-existent with its commencement. This at once leads us to inquire whether, in fevers, *the departure from healthy action commences in the fluids or in the solids?*

Suppose a person previously healthy is exposed in a marshy place to the miasma there generated, and soon after is seized with fever. In such cases it is usual to say that the morbific cause has acted on the nervous system in the first instance. Now, the cerebro-spinal mass is secured from any such influence by being inclosed within the cranium and spinal canal, and we can scarcely admit that it can make an adequate impression on the peri-

pheral extremities of the nerves where they are guarded by the cuticle, or that it can produce so lasting an effect by being applied to the surface for a few minutes. If, however, the influence is said to be exerted on the nerves through that part of the tegumentary membrane that lines the lungs, we may reply that, considering the function of the organ, it is much more probable that the miasma conveyed by the respired air acts on the blood in the first instance, and through it on the nervous and other systems. To this it may be objected, that from the results of experiments made by Allen and Pepys, as well as by Ellis and others, it has been concluded that none of the constituents of the air enter the blood, as all that part of it which suffers alteration in the lungs can be accounted for in the expired products. But more recent and better-devised experiments, particularly those of Dr. Edwards, go to prove that not only an absorption of oxygen takes place, but also a diminution of the volume of the respired air. Dr. Prout has deduced from his researches some inferences which are also much to our present purpose. He has ascertained that violent and long-continued exercise, fasting, and depressing passions, lessen the quantity of carbonic acid produced by respiration. Now, are not these the circumstances usually set down as predisposing causes of fever? And are they not said to act by weakening the system, and thereby diminishing its resisting power? But if the above experiments prove correct, we may give another rationale of the operation of these agencies, deduced from the fact that by lessening the excretion of carbon, they tend to retain in the system a substance which ought to be eliminated from it. If when the system is so predisposed a quantity of malaria is inhaled and absorbed, its introduction into the blood may cause such a change in the properties of that fluid as will be sufficient to give origin to that train of symptoms which characterizes fever, inasmuch as by going the round of the circulation it is presented to the different organs, and will influence each of them

according to their original or acquired susceptibility. Some other inferences have been deduced by Dr. Prout from his experiments, which bear on this question (Annals of Philosophy, vol. ii. p. 330). He has ascertained that the quantity of carbonic acid exereted from the lungs is influenced by the hour of the day, and that in a uniform and regular manner. The greatest quantity discharged at a given time is about noon, or from 11 A.M. to 1 P.M. from which hour it gradually declines until it reaches its minimum, about 8 in the evening; it remains stationary until $3\frac{1}{2}$ in the morning, when it begins again to increase. Should these results be verified on a large scale, they will tend to throw some light on that singular periodicity of exacerbation and remission which obtains in hectic and intermittent fevers. These views will doubtless expose me to the charge of abetting the doctrines of the humoral pathologists. With such an objection I have nothing to do; my only solicitude is about the correctness of the facts here grouped together, and the fairness of the inferences deduced from them.] The necessity of attending to the condition of the blood is very forcibly stated by Dr. Smith; but he is decidedly of opinion "that changes in the fluids can only be second in the series of morbid events; they can never be primary antecedents or first causes, but merely sequents or effects." I give the opposing opinions, in order to stimulate to further inquiry.

MORBID CHANGES INDUCED IN VARIOUS ORGANS DURING THE PROGRESS OF FEVER.

Though febrile and inflammatory action are by no means identical, and fever and inflammation not in any way convertible terms, yet many pathological conditions in different organs arise during fever which produce effects observable after death, analogous in many, if not in most particulars, to those caused by inflammation. The necessity of examining the changes of structure produced by other diseases, as well as by

fevers, is so generally admitted, that it is quite unnecessary to dwell upon it. The reader, however, may be desirous to know what are the morbid conditions of the different organs most usually found to obtain in fever by those who have had opportunities of making such inquiries on a large scale. I shall take the parts in the order in which they are examined whilst making post-mortem examinations; viz. the intestinal tube and mesenteric glands, the liver, spleen, pancreas, kidneys; the circulating system, the lungs, the nervous and muscular systems.]

862. *Inflammation of the Mucous Membrane—Characters of.*—A brief summary of the anatomical characters presented by the digestive tube when inflamed, may not be deemed misplaced. On opening the abdomen of an animal in which inflammation had been previously excited, it is not unusual to find the canal much contracted, and a certain degree of vascularity visible from the outside. This may be either in the cellular tissue connecting the serous with the muscular coat, or (as is more usually the case) between the latter and the mucous lining. A contracted state of the canal should not, however, be considered as decisive of the existence of inflammation; it may exist when there is no trace of any such condition. The inner surface presents a great variety of appearances. In some instances, a degree of redness, varying from clear vermillion to a reddish brown, runs uniformly for a certain extent, and may then gradually decline, as occurs usually in the small intestines, or end abruptly, as may be observed at the junction of the duodenum with the stomach, or at the ilio-cæcal valve, of which one orifice may be red, whilst the other retains its natural paleness. The valvulæ conniventes are more deeply red than the intervening spaces, but if they are unfolded, the difference disappears, which shews that it is owing to the apposition of the two lamellæ of peritoneum. Spots of redness also occasionally occur, which appear like so many isolated inflammations, as the intervening parts of the membrane

retain their natural condition. Instead of an uniform redness, it is diffused in lines, in an arborescent form, owing to an injection of the vessels.

In the natural condition, and while an animal is fasting, the mucous membrane of the stomach is pale, or of a slightly rosy tinge, particularly at its splenetic extremity. But on the introduction of food, there is an afflux of blood, and an evident redness. As the digested mass passes on into the duodenum, the redness accompanies its progress, and so on throughout the canal. On this account the cœcum of rabbits, which is constantly found distended with fæcal matter, is deeply red and vascular. The first effect of inflammation is to determine an afflux of fluids to the part. The mucous membrane becomes red, vascular, and thickened. The dark brownish tint sometimes observed, arises rather from the intensity of the inflammation than from its duration. The membrane also becomes thickened from the cause just mentioned, the thickness being, like the inflammation which induces it, sometimes diffused, at others circumscribed. In the latter case we observe superficial elevations, varying in size from that of a sixpence to a half-crown, but this is more frequently found in chronic inflammations, when, though the thickening remains, together with an increase of firmness, the redness has disappeared. The next effect of acute inflammation after injection and redness, is to soften the structure; hence the membrane often becomes so pulpy as to be scraped away readily by the handle of a scalpel.

From the surface of the mucous membrane small conical elevations occasionally arise, depressed at the summit, and placed either singly or in groups, more particularly in the jejunum and ilium, or transverse colon. In the inflamed parts of the intestine a reddish fluid is not unfrequently found, which appears to consist of a mixture of mucus and blood. The quantity of fluid thus exhaled is sometimes very considerable, and must tend materially to debilitate the patient. The

inner surface of the mucous lining in cases of dysentery is sometimes found coated by a layer of false membrane, varying in extent according to that of the inflammation. Considerable quantities may also be evacuated during the progress of the disease. In cases such as those here referred to, the sub-mucous cellular tissue is injected, and generally thickened and soft, so as to allow the mucous membrane to be readily detached. In chronic cases we often find it several lines thick, and at the same time dense and firm.

The muscular coat of the intestines is subject to but few alterations; it may, like other structures, be softened and thickened by inflammation. But it may take on a sympathetic irritation, and contract a greater or less extent along the inflamed parts. The occurrence of these partial contractions may serve to account for intus-susceptio, or invagination. The narrowed part still retains its vermicular motion, and gradually insinuates itself into the contiguous portion, which preserves its natural capacity; this usually takes place from above downwards, but sometimes in the opposite direction.

The ordinary result of inflammation of the mucous membrane (when it does not end in resolution) is ulceration, which may occur in any part of the canal, but much more frequently in some parts than in others, as may be seen by the following tabular view of the result obtained by M. Andral, from an examination of 71 cases, given in his work on Fevers:—

The Stomach presented ulcerations in ...	10 cases.
Duodenum	1
Jejunum	9
Ilium (its lower part)	38
Cœcum	15
Colon, Ascending.....	4
— Transverse	11
— Descending	3
Rectum	1

The following summary is taken from the work above cited; it gives a general outline of the morbid appearances found in the fever cases examined by M. Andral.

Ulcerations in the intestinal tube may be several in number, or there may be only one, which is usually the case when the stomach is the part affected. In the upper part of the small intestines they are separated by considerable intervals; in the lower part they are usually close set, so as to become confluent when seated near the ilio-cœcal valve. In what structure do ulcerations most commonly commence? Some infer, from a consideration of the increase of vascularity and of secretion induced in the mucous follicles when the mucous membrane around them becomes inflamed, that they are the parts most likely to pass into ulceration. This inference, however, is by no means borne out by observation, though it would seem to be countenanced by the frequency of ulcerations in the lower part of the ilium, where the glands are very numerous. But in the duodenum they are numerous also, where ulcerations are very rare.]

863. *Ulceration in the Intestine—Progress of.*—The progress of ulceration may be stated as follows:—The mucous membrane, when inflamed and softened, is either brushed away from the affected part by the passage of the alimentary matter, or removed by ulcerative absorption. The border of the ulcer thus formed will be found irregular, red, and a little elevated, or in some cases, pale, smooth, and depresssed. The bottom of the ulcer varies according to the period at which it is examined. The sub-mucous cellular tissue remains for some time, retaining its natural characters; after a while it also is removed, and then the muscular fibres can be distinctly seen as if they were dissected. These in their turn become red, softened, and finally absorbed, so that the serous coat alone remains. Should the process of ulcerative absorption extend to this also, a perforation is made through the intestine, so that some of its contents escape into the peritoneal cavity,

which at once induces peritonitis in its most aggravated form. The successive steps of this process may be traced by a careful examination of the margin of the ulcer. In 38 cases examined by Andral, with a view to determine the connexion between the symptoms observed during life and the derangements subsequently found in the intestinal canal, the results were as follows:—Eleven only presented marks of gastritis sufficient to exert any influence on the symptoms manifested during life. In thirty, some degree of inflammation and ulceration was found in the small intestine, but in fourteen only did the extent of the organic lesion bear a proportion to the severity of the symptoms.

The *Mesenteric Glands* were found enlarged and somewhat red in the greater number of fever cases in which the intestines were ulcerated. This change does not appear to commence primarily in the glands; it appears to arise from the absorption of irritating fluids from the intestinal canal, just as the glands in the axilla inflame from the absorption of irritating matter in their vicinity.

The *Liver* rarely presented alterations of structure referable to the febrile action. But the bile was found by Andral changed in quantity, and sometimes in its properties. In about half the bodies examined the duodenum and upper part of the jejunum and ilium were found nearly filled with bile. The bile contained in the gall-bladder frequently appeared dark and viscid. In other cases the contained fluid was pale, like serosity. In a scorbutic person it presented this appearance in a remarkable degree; in one or two instances a fluid was found in the biliary ducts and gall-bladder, resembling the sanious discharge from foul ulcers rather than bile. Impure secretions such as these must necessarily exert an injurious influence on the system, as part of them must be absorbed, and so pass into the general circulation.

The *Spleen* in many cases was found enlarged and softened, so as to be readily broken through by pressure with the fingers, when it appeared a pulpy reddish

mass, its investing membrane alone retaining any firmness. In a very few cases it was found large and dense; in some, reduced in size, but as firm in structure as the liver: it very rarely retained its natural size and characters.

The *Pancreas* very rarely presented any trace of alteration. In one or two instances it was found a little more vascular and large than natural, the increased vascularity appearing to be confined to the interlobular cellular tissue.

The mucous membrane of the bladder was found slightly inflamed in two cases.

As to the *Circulating System*, in cases of adynamic fever the substance of the heart was frequently found pale, flaccid, and discoloured: its cavities were generally empty, or contained some dark fluid blood; in three or four instances only were there any coagula in them, and these were quite destitute of tenacity. Whatever blood was lodged in the arterial or venous trunks was very dark and fluid in the majority of cases; in some, however, it was of a bright rosy hue, and seemed like water tinged by some red colouring matter, and appeared to contain scarcely a trace of fibrine. In one case the fluid could scarcely be called blood; it looked like lees of wine, and not unlike the sanies of an unhealthy abscess. No perceptible alteration could in any case be traced in the large venous trunks, and in one instance only was there such a degree of redness in the aorta as to lead to the conclusion that arteritis had existed.

Exhalations of blood were occasionally found in the cavities of the serous membranes either of the head, spinal canal, or thorax; also in the cellular tissue beneath the serous and mucous membranes, or between the muscles. In one instance the exhalation had existed in all these situations. It consisted either of a reddish serosity, or a dark fluid, like blood just issuing from a vein; but it was never observed coagulated. A uniform redness of some part of the aorta not unfrequently exists,

but then it disappears readily by affusion, or by steeping in water for a short time. Most of these results accord with what I have observed in the London Fever Hospital, where I for some time made the post-mortem examinations. In two or three instances I found an effusion of blood as dark as ink into the substance of the recti muscles of the abdomen, and also into the superficial fascia, beneath which it extended along the spermatic cord into the scrotum: a similar appearance presented itself in the psoas and iliacus muscles at one side. This could not have arisen from a gravitation of the blood after death, as the body had not been turned on its face at any time; the appearance of the injection also was quite opposed to such a supposition.]

864. [The *Lungs* are frequently and extensively affected in fevers. They are sometimes found gorged with a reddish serosity, but still crepitant on pressure; in other instances they become impermeable to the air, of a deeply red, or brownish colour, and as soft as pulp, so as to resemble that condition of the spleen already noticed. In ten of the cases above referred to, red hepatization existed; in three only was it seated in the right lung, in the remainder it occurred in the left, and in five of these it was the lower lobe that was affected. In one case both lungs were hepatized; at the left side in the upper lobe, at the right in the lower. Gangrene of the lung was met with but once, the gangrene spot being in the upper lobe, the lower was hepatized. In some of these cases, spots of grey hepatization existed.]

[In three of Andral's cases the lung was gorged with a great quantity of a frothy colourless serosity, such as is observed in œdema of that organ. In four, sero-sanguineous effusions existed, without any other trace of inflammation. In two instances, lamellæ of coagulable lymph were deposited on the pleura, indicating a recent pleuritis, but there was no serous effusion. In the London Fever House I met with a case in which a considerable deposit of coagulable lymph had taken

place both on the pleura costalis and pulmonalis, without any trace of organization, being quite soft and friable. But the serous effusion was so considerable as to occupy three-fourths of the left side of the thorax, the lung being compressed to about double the size of the clenched hand; it was, however, sound, and readily distensible by air blown into it through the trachea. The fever had, in this instance, subsided for some weeks, and the return to convalescence was evidently prevented by the pleuritic effusion. The immediate cause of death was pneumonia, which had seized the whole of the lower lobe of the right lung, part of which was hepatized. I have made some remarks on cases such as this, in the article on Measles, when treating of the pulmonary diseases with which it is so frequently complicated.]

865. [The *Nervous System*, in Andral's experience, presented but few and rather slight alterations. In five cases the membranes were red and injected, in other respects retaining their usual characters. This condition, in four of these cases, was confined to the convexity of the hemispheres; in the other, it extended towards their under surface. In two instances the changes were more strongly marked: in one, a milky serosity was effused beneath the arachnoid, on the convexity of the cerebral hemispheres; in the other, the arachnoid had lost its consistence, so as to be readily torn; the cerebral substance was also injected beneath it. In some cases the substance of the brain was studded with reddish dots, the arachnoid being at the same time injected; in others, this condition existed (though that membrane was healthy), and appeared to arise from the veins being distended with blood. I have heard several persons deny the validity of the distinction that has been drawn between congestion and inflammation of a given structure. The difference may, however, be demonstrated by experiment. If the return of blood from a part be prevented by a ligature on a vein, a congestion will speedily follow. It may be shewn at once by opening the thorax of an animal,

and then inspecting the abdominal viscera; but this produces no permanent change in the colour or consistence of the organ. The analogous condition induced by disease will give rise to considerable disturbance of the functions of the organ affected, marked by its appropriate symptoms, and if continued for some time will most likely end in inflammation. The first effect of inflammation is to soften the textures in which it occurs, and the change of colour it induces is permanent, the colour being as it were dyed into the part by a vital process.

In Dr. Smith's practice the morbid changes in the brain and its membranes occupy a much more prominent place than M. Andral assigns them.

The *Muscles* are often perceptibly wasted; fifteen days of febrile action will induce in them, in some instances, a greater degree of atrophy than a chronic disease of six months' duration. In cases of adynamic fevers the muscular structure has been found in some parts livid, as if infiltrated with a dark and impure blood.]

All ages do not appear to be equally susceptible of fever, as will be seen by referring to the following table, which sums up the observations on two hundred and twenty-nine fever patients treated in M. Lerminier's ward in "La Charité," during the year 1822:—

Age of the Patients.	Their Number.
15	1
16 to 20	67
20 — 25	99
25 — 30	29
30 — 35	10
35 — 40	4
40 — 45	7
45 — 50	0
50 — 55	7
59	1
64	1
65	1
71	1

MORTALITY OF FEVER.

866. [There is great difference in the ratio of mortality of fever, not only in different places, but in different epidemics.

" I have," observes Dr. Tweedie, in his Clinical Illustrations of Fever, " shown in one of the tables the annual mortality in the London Fever Hospital since its establishment in 1822, by which it will be seen that it has varied even under the same physician (the late Dr. Bateman, whose knowledge and judgment were admitted by all who knew him) between one in three and five-eighths, and one in twelve.

" The variation in the annual mortality, therefore, cannot be imputed to any difference in the mode of treatment, but to the severity of the fever at different times; and more especially to the very late period of the disease at which patients are often sent in.

" Since the time of Dr. Bateman's retirement from the Fever Hospital, the annual mortality under the different physicians has varied from one in five to one in nine and a half."

The mortality of the year included in this report (viz. from 1st September, 1828, to 1st September, 1829) is about one in seven one-sevenths; but it is proper to state, that of the seventy-three fatal cases, there died

Within 24 hours after admission	5
30	5
36	9
48	3
3 days	8
4	3
5	10
6	5
7	3
Beyond this period	22
	73

It appears, therefore, that no fewer than nineteen patients died within thirty-six hours after they were received into the hospital, and were therefore quite hopeless when admitted; indeed, some of the cases were moribund, and actually died a few hours after they were placed in bed.

With regard to the mortality of fever at different ages, the following are the results taken from five hundred fatal cases:—

Under 10	14
10 to 15	40
15 — 20	118
20 — 25	84
25 — 30	73
30 — 35	25
35 — 40	39
40 — 45	30
45 — 50	29
50 — 55	14
55 — 60	12
60 — 65	6
65 — 70	9
70 — 75	5
75 — 80	2
	500

INTERMITTENT FEVERS.

867. [*Intermittent Fevers* occur in paroxysms separated by stated intervals, during which the patients are free from febrile excitement. Each paroxysm is divided into three stages, which succeed one another in regular order. The patient is at first affected with some degree of languor and listlessness, with perhaps yawning and stretching. The face becomes pale, the features shrink, and the skin generally appears as if constricted. A coldness is now complained of, which, commencing at

the back or loins, thence extends, so as to become general, which produces a tremor of the limbs, and rigor or succussion of the body. After a while the sense of cold diminishes, and gives place to that of heat, which increases until the skin assumes a reddish blush; the features of the face at the same time lose their shrunken appearance, and gradually expand, and even become as it were turgid. The skin, as these changes are going on, remains dry for a time, but finally a sweat breaks out, first on the forehead, and then successively on other parts, extending from above downwards until it becomes general all over the body. Thus the cold, hot, and sweating stages, succeed one another, the whole paroxysm being usually concluded within eight hours. After a certain interval the same train of phenomena is again commenced and gone through, the period of their return determining what is called the type of the fever. There are three regular types: viz. *quotidian*, *tertian* (the most common), and *quartan*, in which the paroxysm is completed in 24, 48, and 72 hours. The type sometimes changes, tertians and quartans becoming quotidians, and quotidians becoming remittents. M. Andral has recorded the result of his observations, during the year 1821, on intermittent fever: out of 56 cases treated, 28 presented the quotidian or double tertian type, 19 the tertian, 7 the quartan, and 1 was erratic. The frequency of the disease in different seasons of the year, and the relative susceptibility of different ages to it, may be inferred from the following tables:—

In the months of January		
February	...	9
March		
April		
May	...	10
June		

July	
August	... 17
September ...	
October	
November ...	... 20
December ...	

Age of the Patients.	Their Number.
15	4
16 to 20	5
20 .. 25	19
25 .. 30	14
30 .. 35	6
35 .. 40	1
40 .. 45	0
45 .. 50	5
50 .. 55	1
55 .. 60	1
61	1
68	1

A very small number of these cases had been exposed to marsh miasmata, and in some of these the fever had commenced whilst they were in the marshy district, but in others not for some weeks after they had changed their abode. In one individual who had been well for two months, a relapse was induced by returning to the place where he had contracted the disease. A few were gardeners, who usually worked and slept in the wet grounds about Paris. The great majority of these patients had got the intermittent within the city: some of them worked in low, damp, and ill-ventilated places; one or two lived on the banks of a small river; and one got intermittent from having lived some time in a newly-built house. In several, the fever was induced by want, fatigue, and exposure to cold and wet; some could be traced to no assignable cause. No relation

could be found to exist between the type of the fever and the nature of the exciting cause.

From the tabular views above cited, it appears that persons under 15 years of age enjoy an exemption from continued and intermittent fevers (at least so far as an inference can be drawn from the results of hospital practice), though they are so liable to fevers of another denomination. At first sight it may appear strange that persons from 20 to 25 years of age should be so susceptible of these diseases. An adequate explanation of the fact, however, is given, as a majority of these cases consisted of young persons who had come from the country to seek employment in Paris, and were exposed to privations, disappointment, fatigue, and unwholesome food, the usual predisposing causes of fever.]

868. Remittent fevers rarely occur in these climates; they occur for the most part in hot climates; and, from their complication with derangements of the liver and bowels, are denominated *Bilious Remittents.*]

YELLOW FEVER.

869. *Symptoms.*—A most fatal disease, occurring in hot climates, and running its course in a very short time: the principal symptoms are, violent headache, often confined to the orbitar region, with redness or paleness of the face at its commencement, and soon followed by itchings, nausea, violent thirst, yellowness of the skin observable on the temples, the conjunctiva, the sides of the neck, and soon spreading over the whole body: violent pains in the epigastric region, and of the loins, now supervene; sensation of burning heat internally, with coldness of the extremities; vomiting of yellow, then dark matter; urine diminishes, and finally is suppressed; passive hæmorrhages occur; local gangrene; syncope, hiccough, subsultus tendinum, and gradual sinking of the pulse.

Anatomical Characters.—General yellowness of the skin, interspersed with blue livid spots; the muscles

soft or contracted; congestion of blood in the membranes of the brain, and occasionally an effusion of a sanguinolent serum, is found at the base of the brain and along the spine; red, livid, or dark black spots on the mucous membrane of the stomach, which is filled by a dark fluid matter, similar to what was vomited. The lining membrane of the intestines often of a brown colour; the liver softened; the kidneys red, or covered with gangrenous spots; the bladder contracted, sometimes inflamed.

PLAGUE.

870. *Symptoms.*—An essentially contagious disease, inducing death very rapidly, always accompanied by carbuncles and buboes, which terminate in gangrene; petechiæ on different parts of the body, which are attended by the general symptoms attributed to ataxic and adynamic fevers.

Anatomical Characters.—Gangrene of different portions of the digestive tube; sanguineous congestions in the head or chest; suppuration more or less of the principal viscera, and invariably gangrene is found in the skin and glands of the groin and axilla.

POISONS.

THE METALLIC CORROSIVE POISONS.

POISONING BY THE PREPARATIONS OF ARSENIC.

871. *Symptoms.*—Taste acrid and metallic; constriction of the pharynx; nausea; vomiting; the ejected matter brown, sometimes bloody; salivation copious; præcordial anxiety; heat and pain in the stomach; stools black, sometimes green, fœtid; violent colic pains; tenesmus; pulse small, quick, and irregular; intense heat of skin; burning thirst, cold sweats, difficult respiration; urine scanty, red, or bloody; delirium, convulsions; total change in the expression of the countenance. When the poison has been taken in large quantity the sufferer dies quickly, without presenting all the symptoms characteristic of this mode of poisoning.

Anatomical Characters.—Traces of inflammation, more or less considerable, of the mucous membrane of the digestive canal, from slight redness to ulceration, and even gangrene.

POISONING BY THE PREPARATIONS OF ANTIMONY.

872. *Symptoms.*—The same as those of poisoning by the acids: they usually commence in very abundant and obstinate vomiting, with acute pain of the stomach; there is observed extreme prostration of strength, with copious stools, violent colic pains, cramps, cold sweats, and delirium.

POISONING BY THE PREPARATIONS OF COPPER.

873. *Symptoms.*—Coppery taste in the mouth; eruc-

tations of the odour of copper; nausea; vomiting, with difficulty and pain, of a green matter; pain of the stomach, most painful griping; alvine evacuations frequent, black and bloody, accompanied by tenesmus; tension of the belly; pulse small, hard, and quick; anxiety; cold sweats; headache; vertigo; convulsions.

POISONING BY THE PREPARATIONS OF SILVER.

874. *Symptoms.*—Same as those which characterize the other corrosive substances.

POISONING BY THE PREPARATIONS OF GOLD.

875. *Symptoms.*—Same as those which result from the actions of the greater number of other metallic salts.

POISONING BY THE PREPARATIONS OF MERCURY.

876. *Symptoms.*—Of the same character with those produced by other corrosive substances; acrid and metallic taste, tumefaction, and burning heat of the throat; pain of the stomach and abdomen, increased in a short time to an intense degree; salivation quickly induced, with the characters peculiar to mercury, particularly when the corrosive sublimate has caused the poisoning.

POISONING BY THE PREPARATIONS OF BISMUTH.

877. *Symptoms.*—Same as those caused by the action of other very active corrosive poisons.

POISONING BY THE PREPARATIONS OF LEAD.

878. *Symptoms.*—Taste sweet, metallic, and astringent; pain of stomach; constriction of the throat; vomiting obstinate, very painful, sometimes bloody; hiccough; convulsions. Sufferers, if they survive, are very generally afflicted with palsy, or various painful affections.—See the article *Colica Pictonum.*

POISONING BY THE PREPARATIONS OF TIN.

879. *Symptoms.*—Those common to all the corrosive

poisons; sometimes paralysis supervenes, but most frequently death is the result.

POISONING BY THE PREPARATIONS OF ZINC.

880. *Symptoms.*—Taste sour, with a sense of strangulation; nausea; vomiting. The symptoms often cease quickly, in consequence of the poison being ejected by means of its emetic property: should it, on the contrary, remain in the stomach, the symptoms produced by other corrosive poisons are observed.

POISONING BY THE ACIDS.

881. *Symptoms.*—All the acids produce very nearly the same effects; viz. a taste sharp, burning, and disagreeable; heat and acute pain of the throat, then of the œsophagus, stomach, and intestines; fetor of the breath; eructations; nausea; constant vomiting of a bloody liquid of a yellowish or brown colour, which produces an effervescence on the ground, and deeply reddens tincture of turnsol; stools copious, more or less tinged with blood; extreme sensibility of the abdomen; incessant burning, thirst; pain increased by drinking; pulse small and irregular; urine scanty, and evacuated with difficulty; respiration laboured; extreme paleness, with alteration of the face; cold sweats, and in some instances convulsions. The intellectual faculties generally remain unimpaired. Very often the poison causes, by its contact with the lips, tongue, and pharynx, yellow or brown eschars, which drop off, and produce a loss of substance.

PRUSSIC ACID.

882. The Prussic acid, when inoculated on the surface of the body, even in very small quantity, causes almost instant death.

POISONING BY THE ALKALIES AND THEIR COMPOUNDS.

883. *Symptoms.*—Taste pungent, urinous, and caustic, accompanied generally by the symptoms of poisoning by

concentrated acids; the liquid of the vomited matter and the stools, renders syrup of violets green.

Ammonia produces total derangement of the faculties, and sudden death.

POISONING BY PHOSPHORUS.

884. *Symptoms.*—Taste of garlic in the mouth, with a peculiar parched sensation, together with all the symptoms which result from poisoning by the acids.

POISONING BY IODINE AND ITS PREPARATIONS.

885. *Symptoms.*—Same as those which are characteristic of poisoning by the acids; and, in addition, a strongly marked yellow colour of the tongue and fauces.

POISONING BY ALCOHOL AND ITS COMPOUNDS.

886. *Symptoms.*—Intoxication, then complete insensibility; paralytic phenomena; stupor; the face swollen, and of a deep red hue; respiration stertorous; the breath smells strongly of the liquors which have produced the intoxication.

POISONING BY VEGETABLE SUBSTANCES.

ACRID POISONS.

887. *Symptoms.*—All the poisons of this class produce very nearly the same effects; viz. taste acrid and pungent, or intensely bitter; heat in the throat; dryness of the mouth and pharynx, with constriction; vomiting, continuing even after the ejection of the poison; acute pains in the stomach and intestines; alvine evacuations abundant; pulse strong and quick; sometimes dilatation of the pupil; general insensibility; smallness and irregularity of the pulse; death.

NARCOTIC POISONS.

888. *Symptoms.*—Heaviness in the head; stupor; torpor; inclination to vomit; great tendency to somno-

lence; countenance dull; face swollen; eyelids tumefied; pupils always much dilated, with little or no power of contraction: relaxation of the muscles of the limbs, particularly the inferior; sometimes convulsive movements of different parts of the body; the pulse, at first generally strong and full, afterwards becomes feeble, slow, and irregular; finally, præcordial anxiety, alvine dejections, and death.

Anatomical Characters.—After death there are not discovered any traces of inflammation in the parts with which the poison is found in contract, but there is congestion of the vessels of the brain and the lungs; these latter do not crepitate on pressure, and are of a deep red colour; the blood contained in them, as well as that in the heart, is sometimes liquid, sometimes coagulated.

POISONING BY ANIMAL SUBSTANCES.

POISONING BY THE FLESH OF FISHES.

889. *Symptoms.*—In a time more or less considerable after the fish has been swallowed, there are experienced a heaviness in the stomach, vomiting, griping pains, cephalalgia, vertigo; the head and circumference of the eyes are intensely hot; the face is red and swollen; the patients feel burning thirst; a rash, like that of urticaria, frequently appears over the entire body; the pulse is accelerated, small, and hard; convulsions sometimes come on; the extremities are rarely cold.

POISONING BY THE STING OF VENOMOUS INSECTS.

890. *Symptoms.*—Generally pain, swelling, and sometimes high inflammation of the part stung, in some cases terminating in gangrene, and accompanied by nausea, vomiting, fever, numbness; general shivering, and in some instances death.

POISONING BY CANTHARIDES TAKEN INTERNALLY.

891. *Symptoms.*—Breath fœtid; taste acrid; heat excessive; pain in the throat, stomach, and belly; vomiting frequent and bloody; alvine evacuations abundant; heat in the lumbar region and the bladder; strangury, or entire retention of urine, with frequent desire to make it; obstinate and very painful priapism; fever; convulsions; delirium; death.

POISONING BY THE BITE OF VENOMOUS SERPENTS.

892. *Symptoms.*—Acute and sharp pain in the part which has been bitten, and extending over the entire body. There immediately appears a swelling, with hardness and paleness at first, then with livid redness, and a gangrenous appearance; the pulse small, frequent, and irregular; then supervene syncope, vomiting, anxiety, difficulty of respiration, with cold and abundant perspiration; the sight becomes weak, delirium is manifested, a yellow tinge is spread over the entire body; after a certain time the bitten part becomes insensible, discharges a serous fluid, is covered by gangrenous specks, and the sufferer sinks.

POISONING BY THE BITE OF RABID ANIMALS.

893. At a time more or less considerable after the infliction of the wound (usually between the twentieth day and third or fourth month), the bitten part becomes painful, opens afresh, emits a reddish serum; if it has not been cicatrized it becomes red, and affords a serous and reddish pus; restlessness, anxiety, spasms, troubled respiration, succeed; the sufferer feels a trembling, which extends from the sore over the entire body, and appears to end in the throat; he is agonized by internal heat, and sometimes excessive thirst, but he dares not to drink; the sight of water, or of polished or shining bodies, irritates him, and aggravates the symptoms; de-

glutition is impossible*. At the expiration of four or five days the symptoms are increased; violent convulsions pervade the entire body; produce a frightful expression of the countenance; the eyes are red and prominent; the tongue hangs outside the mouth, from which flows a viscid saliva; in a few cases there is an inclination to bite; the pulse becomes unequal and intermittent; a cold sweat extends over the entire body, and death speedily takes place.

POISONING BY GASES.

POISONING BY CARBONIC ACID GAS.

394. *Symptoms.*—At first, heaviness and pain in the head; a feeling of compression in the temples; vertigo, palpitations, tingling noise in the ears; sometimes nausea; the respiration is difficult and stertorous, then ceases entirely, so does the circulation; the patient is apparently dead.

When asphyxia is produced in a place where the air not being renewed has in consequence lost all its oxygen, and contains a large quantity of carbonic acid gas, these symptoms are preceded by violent thirst, copious perspirations, and pains of the chest; then syncope, insensibility, and inability of motion; in some cases the limbs are flexible, in others they are rigid; heat generally continues for a considerable time; the colour of the face sometimes pale and leaden; sometimes red or violet; frequently there are involuntary alvine and urinary evacuations.

Anatomical Characters.—The body a little swelled; the limbs flexible; veins of the lungs and brain gorged with black and fluid blood; the arteries almost empty;

* These symptoms are by no means constant attendants on hydrophobia. I have seen two cases in which the patients called for food and drink, and partook of both even a few hours before death.—T.

the muscles softened; the mucous membrane of the stomach and intestiues reddish; the tongue swollen; epiglottis always elevated.

POISONING BY THE HYDRO-SULPHURET OF AMMONIA, AND HYDRO-SULPHURIC ACID.

395. *Symptoms.*—When the patient has respired but a small quantity of the deleterious gas he experiences uneasiness, nausea, general convulsions; the skin is cold; the respiration is free, but is performed in jerks: the pulse is irregular.

When the gas has been respired in large quantity, the symptoms of asphyxia, caused by carbonic acid, are observed; in addition, the pupil is dilated and immoveable; the mouth is filled with bloody foam; the respiration is shor tand difficult; from time to time there occurs a sort of convulsive agitation; there exists, at intervals, a tetanic rigidity of the muscles; the body is curved backwards; the sufferer cries out with pain. If syncope makes its appearance it is rarely of long continuance.

Anatomical Characters.—The bronchi and nasal fossæ are covered by a viscid and brownish mucus; the lungs are swollen; the heart and vessels contain blood, which is black, thick, and abundant; all the soft parts, deprived of their natural consistence, are very easily torn, and in a very short time become putrid.

ASPHYXIA FOR WANT OF RESPIRABLE AIR.

396. *Symptoms.*—Respiration is at first hurried, and, in a short time, pain of the chest, then spitting of blood and syncope, supervene.

397. When the asphyxia is produced by cold, the patient does not experience pain, but stupor, sleepiness, and torpor, to which succeeds a suspension of respiration and circulation.

THE END.

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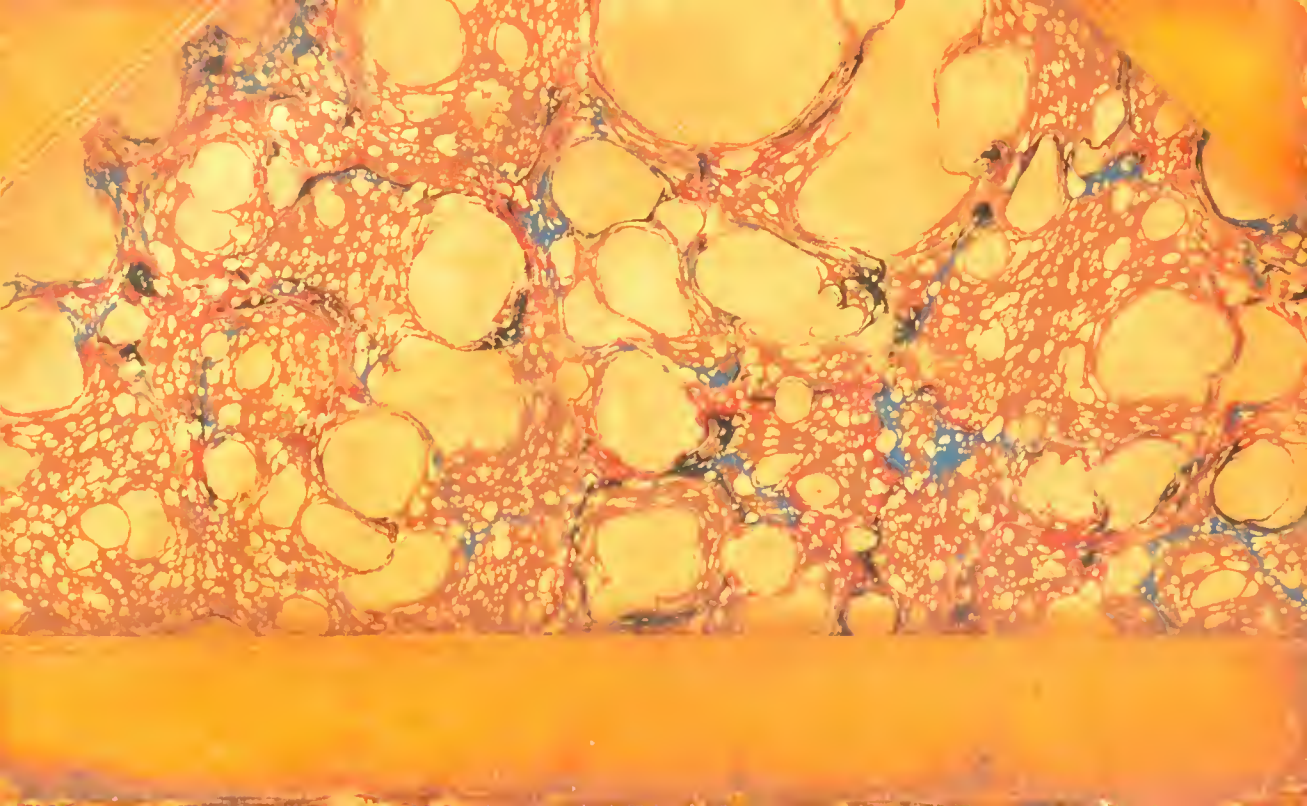
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